

THE GEOGRAPHICAL MAGAZINE

VOLUME XVI

May 1943–April 1944

LONDON

40-42 WILLIAM IV STREET, STRAND

W.C.2

THE GEOGRAPHICAL MAGAZINE

Editor
Michael Huxley

Executive Editor
Ivy Davison

Advisory Editor
John Lehmann

The founders of THE GEOGRAPHICAL MAGAZINE undertook the legal obligation to assign one half of all profits distributed by way of dividend or bonus to a fund for the advancement of exploration and research, and the promotion of geographical knowledge. This fund is administered by a Board of Trustees, whose Chairman is the President of the Royal Geographical Society or his nominee

Contents

VOLUME XVI, NO. 1

	PAGE
LONDON PLANS. By J. M. RICHARDS	I
EAST AFRICA AND THE FUTURE. By ELSPETH HUXLEY	14
THE ISLE OF DJERBA. By W. M. COUSINS	24
A HIMALAYAN HOLIDAY. By R. D. LEAKEY	32
FROST IN SPRING. By RAYMOND BUSH	40
NEW ENGLAND LIGHTHOUSES. By EDWARD ROWE SNOW	50

VOLUME XVI, NO. 2

UNDEVELOPED SOUTH AMERICA. By F. A. KIRKPATRICK, F.R.Hist.S.	55
THE CIVIL WARS OF ENGLAND. By C. V. WEDGWOOD	66
CHALGROVE FIELD. By JOHN HAMPDEN	79
KING COTTON. By CLAUDE BIRTWISTLE	84
SUNLIGHT ON MALTA. Notes and Photographs by BARBARA POWER	96
THE WILDERNESS OF JUDAH. By HENRY C. BREWSTER	102
GATEWAYS OF THE SOUTH ATLANTIC. By ALEX COMFORT	108

CONTENTS

VOLUME XVI, NO. 3

	PAGE
AIR POWER AND GEOGRAPHY. By Marshal of the R.A.F. Sir EDWARD ELLINGTON, G.C.B., C.M.G., C.B.E.	111
KODIAK: ALASKA'S NEW NAVAL BASE. By ISOBEL W. HUTCHISON	120
THE STRUCTURE OF THE PAST. I. Ancient Egypt: Expansion and Decline. By SIDNEY SMITH	126
ENGLISH GATE LATCHES. By E. M. MARTIN	138
GEORGE CRABBE AND SUFFOLK. By CHARLES TENNYSON, C.M.G.	140
THE BIRTH OF A VOLCANO. By T. IFOR REES, C.M.G.	147
WORK AND WEALTH OF MADAGASCAR. By A. M. CHIRGWIN, D.D.	152
THE TRIBUTE OF THE THREE COWS. By RODNEY GALLOP	158

VOLUME XVI, NO. 4

CIDER-MAKING IN THE WEST COUNTRY. Notes and Photographs by G. T. HOLFORD	163
THE STRUCTURE OF THE PAST. II. The First Civilization in the Middle East. By Professor V. GORDON CHILDE, D.Litt., D.Sc.	168
THE SALMON HARVEST OF BRITISH COLUMBIA. By L. A. ELLIOTT	180
THE FUTURE OF CAMBRIDGE. By L. DUDLEY STAMP, D.Sc.	186
IN THE MOUNTAINS OF ALGERIA. By GEORGE H. T. KIMBLE	200
THE CONVOY. By CECIL BEATON	210

VOLUME XVI, NO. 5

SHEPHERDS OF GREECE. By ANDREAS ADOSSIDES	217
SELENOGRAPHY: The 'Geography' of the Moon. By ERNEST TILLOTSON	226
DISCOVERING JERUSALEM. By Captain QUINTIN HOGG, M.P.	233
THE GILBERT AND ELLICE ISLANDS COLONY. By Sir HARRY LUKE, K.C.M.G., D.Litt.	242
SCOTTISH STONE AND SCOTTISH BUILDING. By GEORGE SCOTT-MONCRIEFF	248
RUBBER FROM THE DESERT. By HERBERT S. MARSHUTZ	256

THE GEOGRAPHICAL MAGAZINE

VOLUME XVI, NO. 6

	PAGE
ON PATROL IN SOUTHERN ARABIA	265
THE STRUCTURE OF THE PAST. III. Mesopotamia. By Professor V. G. CHILDE, D.Litt., D.Sc.	268
A KILKENNY JOURNAL. By JOSEPH HONE	282
STOCKRAISING IN THE FIJIS. By ALEXANDER HALL	293
RUBBER FROM THE DESERT. II. By HERBERT S. MARSHUTZ	300
MOUNTAINS OF THE MOON. By ROBIN A. HODGKIN	304
LONDON VILLAGE. By WILLIAM SANSOM	312

VOLUME XVI, NO. 7

AN INTRUDER IN EVERYDAY LIFE. The Story of Applied Mathematics. By Professor E. G. R. TAYLOR, D.Sc.	319
THE GAMBIA. By Sir RICHMOND PALMER, K.C.M.G., C.B.E.	326
THE CITY OF RATS. By GLYNN GRATTAN	338
FOG. By GEORGE H. T. KIMBLE	341
THE MONUMENTS AT BROU. By ARTHUR GARDNER, F.S.A.	348
THE WAYS OF A WATER SHREW. By PHYLLIS KELWAY	356
THE ISLE OF MAN. By RENÉ ELVIN	360

VOLUME XVI, NO. 8

THE WILTSHIRE FLAX-MILL. An Example of True Husbandry. By H. J. MASSINGHAM.	369
DIVIDED ITALY. The Interaction of Politics and Geography. By C. V. WEDGWOOD	380
WINTER IN THE CAIRNGORMS. Notes and Photographs by F. S. SMYTHE	392
THE CANADIAN ARTIST AND HIS COUNTRY. By GRAHAM MCINNES	396
THE RUSSIAN CONVOY ROUTE. By G. L. HOGBEN	408
PEOPLE OF THE PRIPET MARSHES. By A. T. LUTOSLAWSKI	416

CONTENTS

VOLUME XVI, NO. 9

	PAGE
GUERILLAS IN YUGOSLAVIA. The Background of the Fighting. By R. P. BROWN	421
THE STRUCTURE OF THE PAST. IV. The Rise and Decline of Crete and Mycenae (I). By STANLEY CASSON	432
RHODES. Notes and Photographs by R. D. STERN	443
URUMCHI. Capital of Chinese Turkestan. By MILDRED CABLE	445
TASMANIA. Island of the Southern Ocean. By KATHLEEN E. GRAVES	452
A BEE-KEEPER'S STORY. By F. C. E. KNIGHT	462
JORDANS. By HORACE SHIPP. Photographs by G. STANLEY WEDDLE	470

VOLUME XVI, NO. 10

THE BIG INCH. The Story of the World's Largest Pipe Line. By R. QUAREN- DON, Ph.D., B.Sc.	475
THE STRUCTURE OF THE PAST. IV. The Rise and Decline of Crete and Mycenae (II). By STANLEY CASSON	484
LIFE ON AN ONTARIO BUSH FARM. By MARY BOSANQUET	492
OLD ENGLISH BRIDGES. Notes and Photographs by WILL F. TAYLOR	502
WATER IN BORANA. By R. O. HENNINGS	508
SECRETS I STOLE FROM THE LAPWING. By B. MELVILLE NICHOLAS	520

VOLUME XVI, NO. 11

SOME PORTUGUESE CASTLES. By ALVES DE AZEVEDO	525
FAMINE IN BENGAL. By SETH DRUCQUER	530
THE ORIGINS OF GERMANY. By C. V. WEDGWOOD	540
A LETTER FROM MARATHON. By W. V. BOWMAN	554
ENGLISH VILLAGES IN RHYME. By J. E. LLOYD	564
ENGLISH INN SIGNS. By F. R. WINSTONE	570

THE GEOGRAPHICAL MAGAZINE

VOLUME XVI, NO. 12

	PAGE
PAINTED CHURCHES IN BUCOVINA. Voroneţ and Suceviţa. By M. NANDRIŞ	573
AN ALMSHOUSE OF CRAFTSMANSHIP. By H. J. MASSINGHAM	584
THE TREATY ROAD. A Journey into Ladak. By R. C. and N. C. McWATTERS.	594
THE SECRETARY BIRD. An African Snake-Eater. By W. F. MILLER	606
WAR-TIME FARMING IN EIRE. By BARNEY HERON	612
LOBSTER FISHERS OF NOVA SCOTIA. Notes and Photographs by MALAK KARSH	618

THE GEOGRAPHICAL MAGAZINE is printed in Great Britain by R. & R. Clark, Ltd., Edinburgh, and published for the proprietors, The Geographical Magazine Ltd., by Chatto and Windus, 40-42 William IV Street, London, W.C.2.

Price one shilling and threepence per copy. Annual subscription, 18/- post free.

Registered for transmission by Canadian Magazine Post. Entered as Second Class matter November 13, 1935, at the Post Office at New York, N.Y., under the Act of March 3, 1879, Section 523, P.L. & R. vi

London Plans

by J. M. RICHARDS

As Editor of The Architectural Review, a post he only gave up to undertake war work, Mr Richards, well known as the author of a number of books on architectural subjects, has closely watched the trends of modern town-planning and weighed the results. His experience thus enables him to write constructively of the problems which now have to be considered if London is to be successfully replanned

BEFORE we can talk about the replanning of London we must know what we mean by London. To some people it means the capital of the British Empire, to some the city with the largest population in the world (a fact which is made a matter of patriotic pride, irrespective of whether or not such large populations are desirable in cities), to some the pleasure centre of the south of England, to some merely the collective name for their own street and those of their friends and relations—in fact their home town. Unfortunately, to too many ‘planners’, professional and amateur, London merely means an unwieldy and obsolete maze of streets which they feel it their duty to disentangle. In addition, the self-appointed planners of the Royal Academy see it as the potential site of a series of imposing architectural effects.

Not one of these pictures is true, but the truest is that which merely identifies London with home, so long as we do not forget the reasons why people call it home: the docks, warehouses, offices, railway yards and shopping centres, which are the cause as well as the effect of so many people coming to live together in one place. Nor must we forget the accumulation of habit and custom from the past, which always impels the life of a great city forward with a momentum of its own. London, in fact, is a going concern, and as such it must be planned.

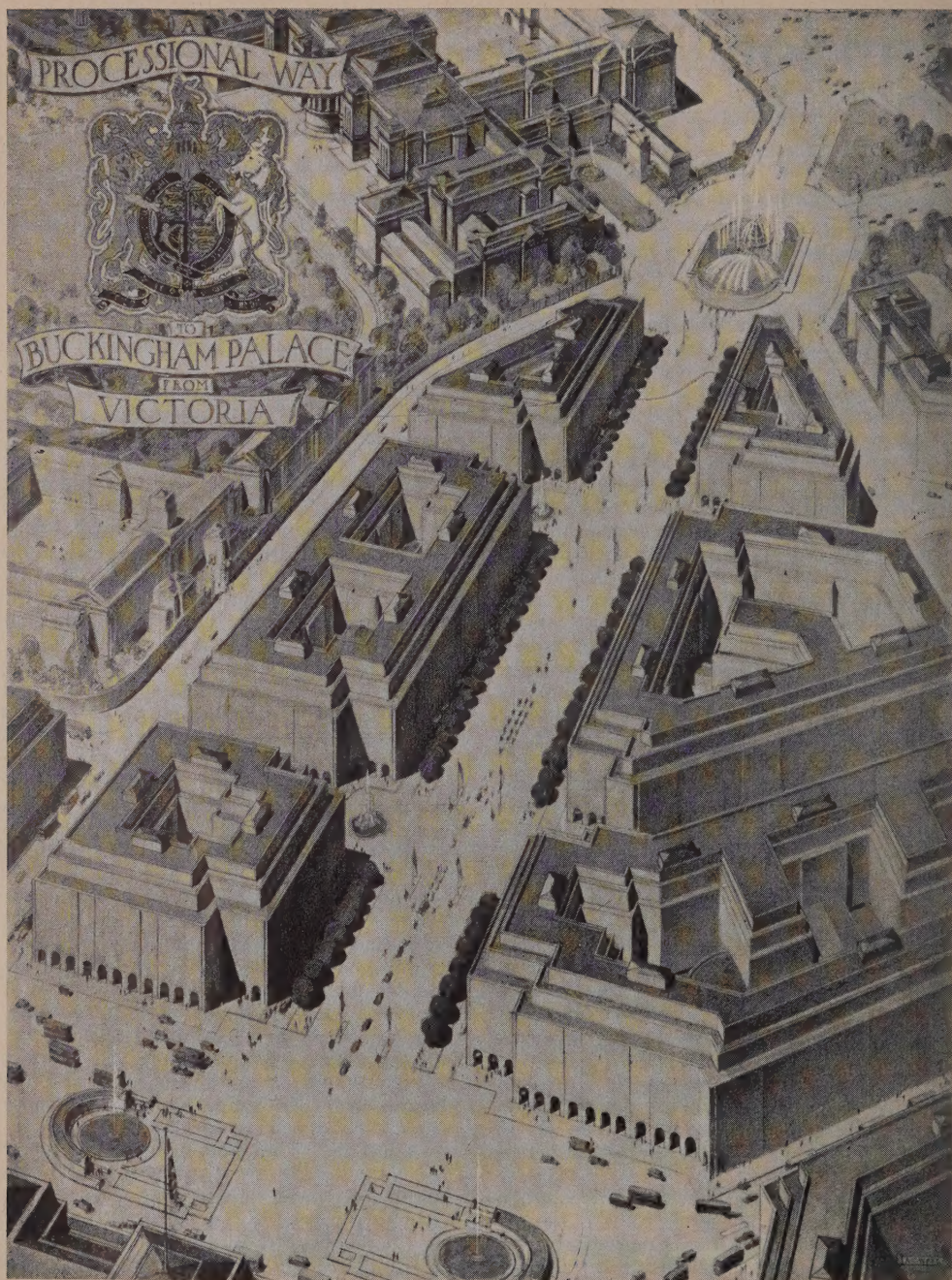
It may seem too obvious to be worth pointing out that a city does not consist of its streets but of what lies between them. But we are often misled by the fact that it is a street-plan we first buy when we want to get to know a city, and that we typify London in our mind's eye, perhaps by the surging traffic along Oxford Street, perhaps by the twisted alleys of the City where tall buildings have made sooty chasms out of medieval lanes, or perhaps by the interminable perspectives down the by-law streets of some outlying area with which we happen to be familiar—Kilburn, say, or Lewisham or Turnham Green. We think of London as a

lot of streets because streets form the network by which familiar bits are connected into a corporate whole.

It is natural to do so, but the planner must go deeper. He of all people must not be led into thinking of town-planning as though it meant street-planning, just because the most striking evidence of the need for planning has in recent years been furnished by the obvious inadequacy of our streets to modern traffic needs, resulting in crawling processions of cars and traffic blocks kept motionless by the hour. It is not enough to get traffic moving faster unless we have made sure that the need for it to move at all is not evidence of bad planning, or that the social vitality of the city is not being frustrated and drained away by that very agitation of its arteries which might be taken to be the movement of its life-blood. Traffic movement is but one aspect of the physical functioning of a city, and a symptomatic, not an essential one. It is the underlying life of a city with which the planner must concern himself.

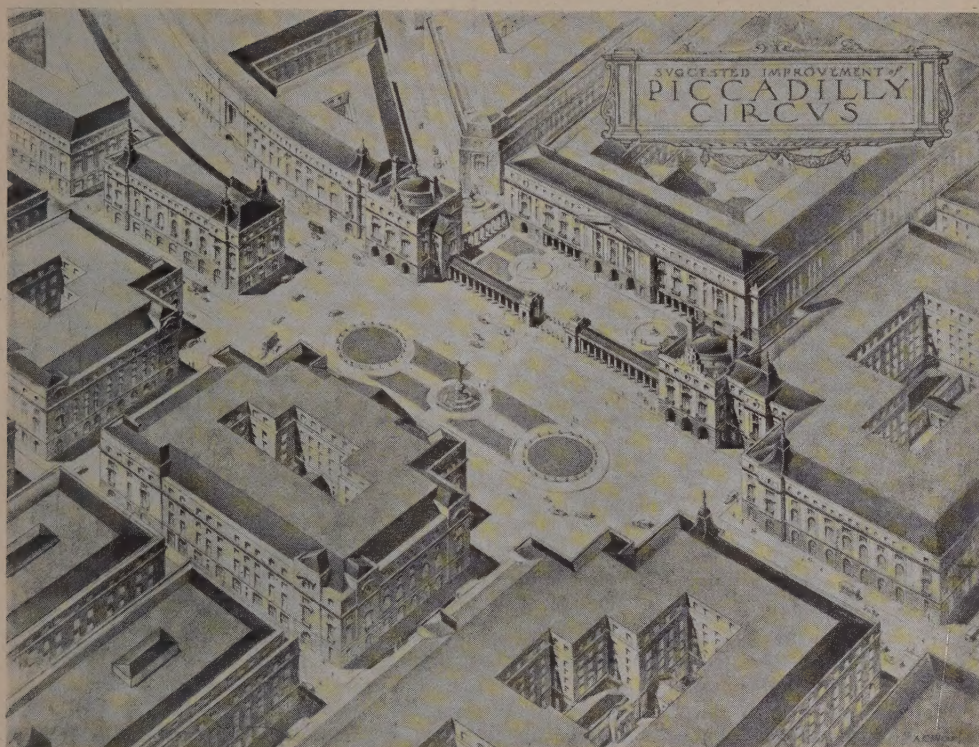
Of all the suggestions about London that have been put forward since bombing brought replanning possibilities into prominence, those presented to the public last autumn by the Royal Academy have attracted most attention. It is particularly unfortunate, therefore, that they exhibit in an extreme form the errors I have just mentioned. In fact they almost entirely ignore the essential life of London, regarded simply as a place where people live and work, marry and amuse themselves and die. They treat it scenically instead of socially—which is not to say that planners should not consider the scenic opportunities latent in the very idea of a great city; only that these opportunities spring direct from the traditions, pursuits and aspirations of its people.

Look at the grandiose façades in which the Royal Academy's new vistas are framed and with which their improved streets are lined. Ignore, if you wish, the clumsy Edwardian architectural style in which these presumably



Country Life

The unreal basis of the Royal Academy's London plans is exemplified in this proposal for a 'proceSSIONAL way' between Buckingham Palace and Victoria Station. Not only is the fulfilment of local needs made subservient to grandiose architectural display, but behind the scenes we find narrow internal courtyards such as enlightened architects long ago discarded as obsolete



Country Life

Another specimen of the Royal Academy's plan to confine London's informality within an architectural strait-jacket. The craze for symmetry is shown in the duplication of the Fire Office which now faces the top of Lower Regent Street by an identical building facing down the Haymarket. There is plenty of room for improvement in Piccadilly Circus, but not by means so foreign to London's tradition

steel-framed buildings are clothed—leave, that is to say, the question of taste and aesthetic appropriateness for another time. What attention have the Royal Academy planners paid to the activities that are to go on behind these façades, let alone what improvement is to be made in the crowded ill-planned quarters that now lie between the radiating fingers of their new processional ways? Architectural design is not an end in itself; it is not the art of a sculptor who has been let loose on a gigantic scale to make impressive play with doorways, windows and cornices, columns, roofs and flights of marble steps. It is a social art, and something must be very wrong if all we can expect to see of the social life of a city from its most important thoroughfares is the glimpse of a tailor marking out his cloth within the dark recesses of an elaborately pilastered window, the rotating shadows of a newspaper's printing machinery behind several exactly identical windows a few yards

down the street, and perhaps the coming and going through a columned doorway between them, indicating the existence of some place of public assembly within. We can only guess at the other miscellaneous activities, as varied and unpredictable as human life itself, that have to accommodate themselves behind these uncompromising frontages. Presumably the Royal Academy intend that some use shall be made of the thousands of rooms that must lie behind their rows of windows. The windows cannot only be a pleasantly arranged pattern to give interest to the cliff-like façades along the processional ways. A whole city, that is to say, cannot be designed from the outside inwards. It cannot, with anything but peril to its health, be forced into the strait-jacket of preconceived architectural effects.

This is the most obvious of several deficiencies observable in the kind of planning envisaged by the Royal Academy. It can

hardly be an exaggeration to say that the publicity they have given to their plan has set back the intelligent public appreciation of planning values for several years. As a result of years of exposition and education, a more enlightened public was beginning to understand that planning is not a mere bee in a few bureaucratic bonnets, nor a technique for imposing architectural regimentation on the natural growth of a town; that it is, instead, an intelligent marshalling of resources, such as the complexity of modern life makes necessary if chaos is not to result, with the object of ensuring the best possible application of available means to ascertainable needs. Its aim is to give the *experts* a chance of demonstrating the value of forethought. But here was the public confronted with a number of experts—some with considerable prestige—exhibiting a replanned London consisting of just such regimentation and just such an airy preference for pictorial effects over human values as they had been taught was a misconception of the very nature of planning. The public was not to know that this scheme had no official status, and was not in fact the sort of thing that the enthusiasts who had talked so long about planning intended should come of it.

There is one answer that I suppose the Royal Academy might make to the charge that they were only playing with pictorial effects instead of planning realistically: they might say their plans could not be dismissed as mere scene-painting since they were based on something as practical as the Bressey Report. I have already given my answer to this. Leaving aside the fact that this argument admits by implication that architecture is only the decoration of the engineer's *fait accompli*, that architecture is only concerned with clothing a planning framework based on nothing but expediency—leaving this delegation of architectural responsibility aside, the fact remains that the Bressey Report, by its own terms of reference, dealt only with traffic needs and freer traffic circulation, and I have already made the point that town-planning is not the same as street-planning.

To make this point is no disparagement of Sir Charles Bressey. His terms of reference, when he was asked to prepare his Report in 1937, were confined to the facilitation of the movement of traffic by means of an improved road system. That was the paramount need in 1937. But things have changed since then; we are now thinking on grander lines and have no need to limit ourselves to the programme Sir Charles Bressey had to be content with before events that could not have

been foreseen in 1937 made drastic planning something more than a remote ideal. These are times in which to plan with the good life that could be led in a city as our measuring-rod, not the convenience of the motorists that frequent its streets.

It is not denied that the Bressey plan, on which the Royal Academy's designs are based, makes some useful and admirable recommendations. The pros and cons of these are matters too technical to be discussed here; and in any case their virtues could equally have been incorporated in a plan that showed more flexibility and imagination as well as the social responsibility any plan worthy of the name ought to show. It is not, however, on technical or exclusively on social grounds that the Royal Academy plan can most usefully be assailed. For its authors might still argue that an academy is not concerned with possible improvements but with accepted standards; that the business of a Royal Academy is not with art as generated by social and spiritual forces but with the unchanging standards of art itself; in fact that their business is to uphold tradition, to be academic.

Meeting the Royal Academy, then, on their own ground, admitting for purposes of argument their right to let the art of which they regard themselves as the guardians revert to the mere embellishment of exteriors, letting others take the responsibility of planning for people's welfare, and freely admitting the desirability, in these materialistic days, of large ideas that are ambitious and grandiose instead of pettifogging in spirit—we still find that it is here the Academy have let us down.

Instead of upholding tradition they have ignored it. London has a unique and precious character, which has nothing to do with her antiquated traffic system or the disgraceful survival of her slums. To respect her character would not be to perpetuate these. It would be to obey the first law of all physical planning: that of making the most of existing character and particularity, exploiting differences, not imposing similarities. London, it hardly needs saying, is different from other places; there lies her future and her opportunity. But the Royal Academy, with their boring vistas and their enforced symmetries, seem to want to turn her into a second-rate Buenos Aires. Even if this sort of character could be produced of first-rate quality, it still would not be worthy of London—nor of the whole English topographical tradition of which London at its best is a transmutation into bricks and mortar. It is not that London is not capable of the grand formal vistas of Paris and Buenos Aires (or,



John H. Stone

A characteristic view in present-day central London. The buildings of Piccadilly are not very distinguished individually, but the casual way the street swings out of sight beneath the trees fringing the Green Park is a far more appropriate basis for new design than planning ruled by formal vistas and exact symmetry

for that matter, of Hitler's new Berlin or Nüremberg); it is that these are too crude for London. She knows how to be more human and more subtle.

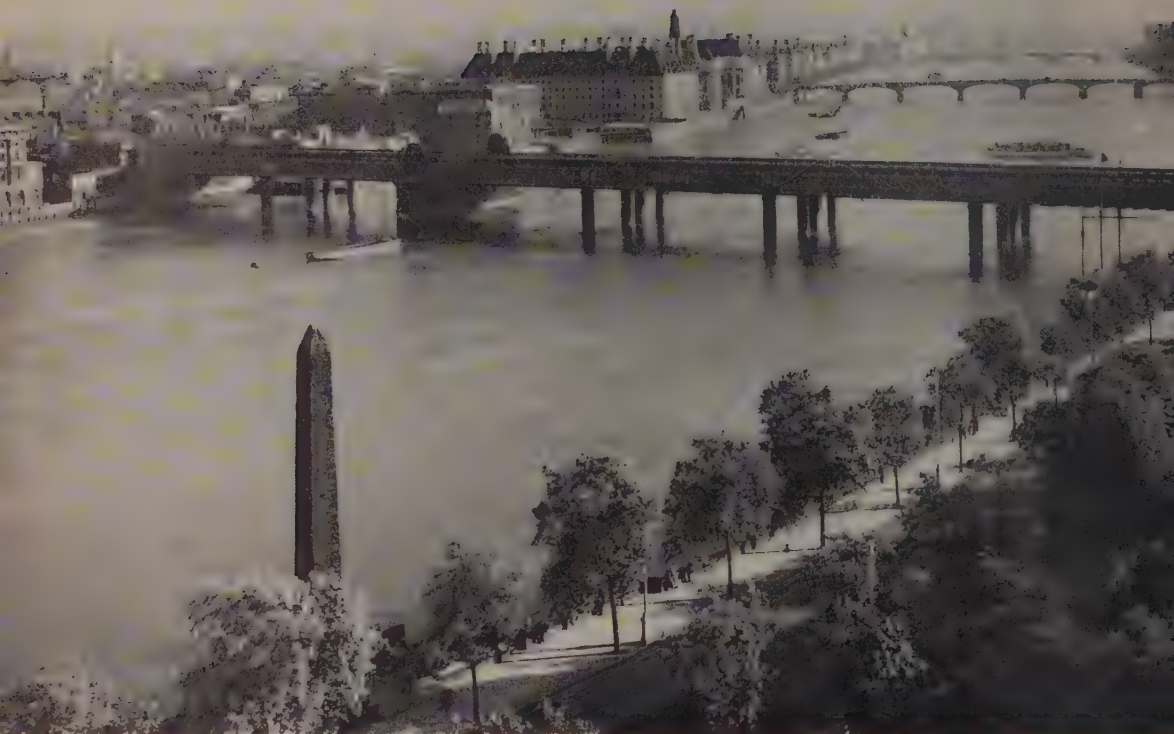
The essence of the English way of planning, which constitutes a very precious inheritance, rooted in our whole way of life and not to be discarded by any Academy without protest, is its informality and its substitution of subtle balance for symmetry. In trying to define it I do not think I can do better than to quote a recent leading article in the *Architects' Journal* on this very issue:

In the matter of the visual possibilities of landscape there is a clear-cut English tradition. It is not easy in a sentence to describe what amounts to a national aesthetic, developed over more than three centuries, particularly as the technical terms evolved in Georgian times have changed their meaning (*picturesque* for instance), but since for brevity the issue must be condensed into a word, let us say that in place of the idea of *symmetry* the English taste has substituted the idea of balance. Hailed throughout 18th-century Europe as an epoch-making aesthetic development, this English way of building up a scene swept through France and Germany, and penetrated Russia. In Europe it was (and still is) known as the English, though according to

Loudon it was known in the England of George III as the *modern*, style. Horace Walpole defined it as the art of making landscape.

What was the landscape idea? Landscape or picturesque theory, about which a large literature arose in the years preceding Trafalgar, consisted in looking for a more subtle approach to landscape, whether rural or urban, than that which the continental tradition had been found capable of. It spurned the symmetrical approach just because it lacked subtlety, because it was too crude. In terms of town planning the symmetrical approach is that which seeks to impose arbitrarily, irrespective of whether the case warrants it, an artificial uniformity. Straight Streets, Triumphal Ways, *Places*, are its stock-in-trade. The idea of balance involves the technique of free composition. First applied to the laying-out of grounds by William Kent, it spread in ever-widening waves through the landscape, first of England, then of Europe, and finally under Nash became incorporated in town-planning theory.

It was the study of such apparently accidental compositions of landscape as, say, St. Paul's from Fleet Street (and a city from the visual planner's point of view is a *landscape*, an urban landscape) that led English planners to develop the landscape theory. Believe it or not, this view of St. Paul's, so essentially a *London* view, providing as it does exactly the kind of effect that is



typical of London, and alone of London, is rubbed out by the R.A. Planning Committee. Instead of Ludgate Hill we are offered a symmetrical lay-out, complete with straight avenues plumb on the axis. As it happens the lay-out, at least the part directly round the base of St. Paul's, is a good one, and shows an understanding of 17th-century ideals, but London is not a city of 17th-century ideals. It is a romantic city, of picturesque caverns, of strange infernal openings revealing unexpected perspectives. Abingdon Street Georgian sandwiched in between the great bulk of Abbey and Parliament; the loop of Whitehall from the House of Lords; the Embankment buildings, more surprising than the Himalayas clearing the tree-tops of St. James'; the tiny Horse Guards seen from under the great bastion of the India Office—these are the typical London views.

If the Academy had used its exhibition to explain to Londoners that the alert planner can multiply such apparently accidental charms up to a point where the streets of a city, which may

seem to the ignorant merely undesigned, can reveal an endless succession of fascinating vistas and juxtapositions; that landscape theory represents the great English improvement upon orthodox continental practice; that the character of London particularly demands development in landscape terms; then the Academy would have done a notable thing for the man in the London street. Instead it has ignored the English tradition. It has taken half a dozen traffic points and laid them out according to the symmetrical South American convention taken over from the dead Beaux Arts dictatorship of France.

That, I think, is a sound statement of principles as well as being fair criticism. It is the so-called traditionalists who are the despoilers of tradition, which is only another illustration of the fact that progressiveness is the truest ally of tradition because only progressiveness can keep it alive and creative.



A. F. Kersting



John H. Stone



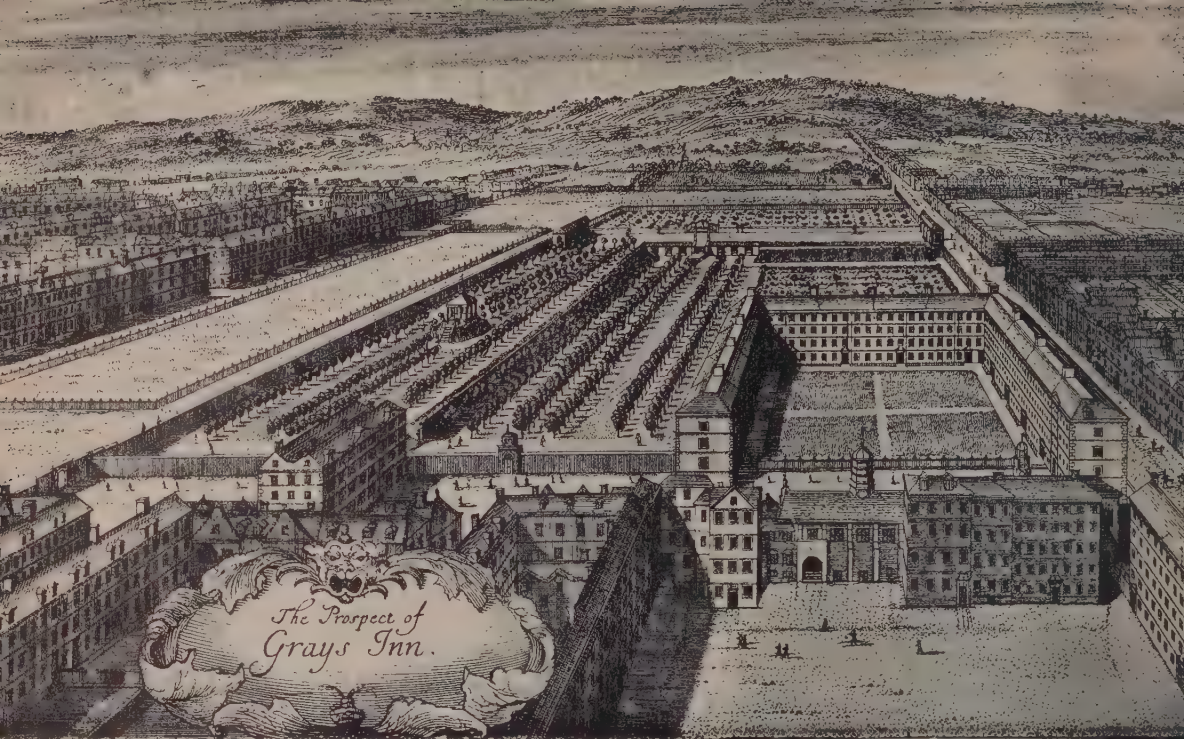
Will F. Taylor

So much for what one might call the cultural shortcomings of the Royal Academy's plan. With its social shortcomings I have already dealt. Its saving grace is, of course, that it is bold. It presumes the need for replanning on a metropolitan scale, in contrast to the niggling scale of the only town-planning measures London has known in our time: the timid street-widenings, the by-pass roads which soon, as a result of ribbon-development, need by-passing in their turn, and the piecemeal 'slum clearance' which only replaces old slum dwellings by dwellings themselves doomed to become new slums because the improvement of isolated buildings cannot eliminate bad living conditions from a whole congested area. Boldness of conception is essential in modern city-planning, and it is a sad thought that to criticize the Royal Academy's plan, as anyone who takes a

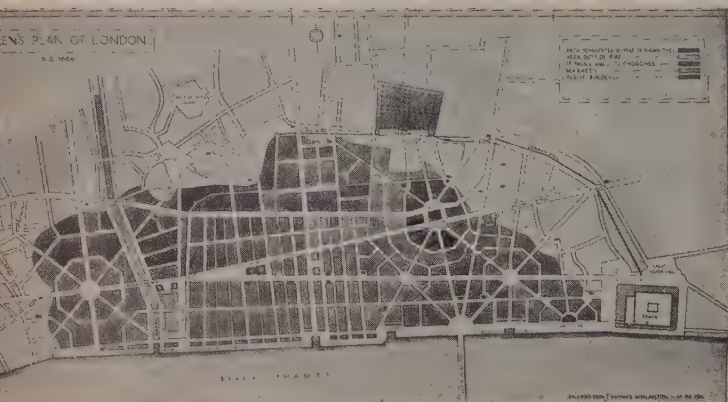
(Left) A representative London panorama, showing the wide loop of the river and the serrated skyline. London is not, however, a city whose pictorial character can be comprehended from the air. It is a city of intimate close-ups. Even its classical architecture, such as Nash's Carlton House Terrace (top), is scenic in quality rather than academic. London's secluded backwaters, like those of the Temple (above), are among its richest possessions

realistic attitude is bound to do, puts the critic momentarily on the same side as those who would like to see that no real planning was in fact done. Certainly, if one regards it only as a gesture of defiance to the defeatists and obstructionists, even the Royal Academy plan is better than no planning at all.

Contemporary interest in the planning of London and the difficulties it may have to contend with has referred many people's minds back to a previous occasion when an opportunity for large-scale improvement occurred but was not taken. Wren's famous plan for London was also an exercise in the



Rischgitta Studios

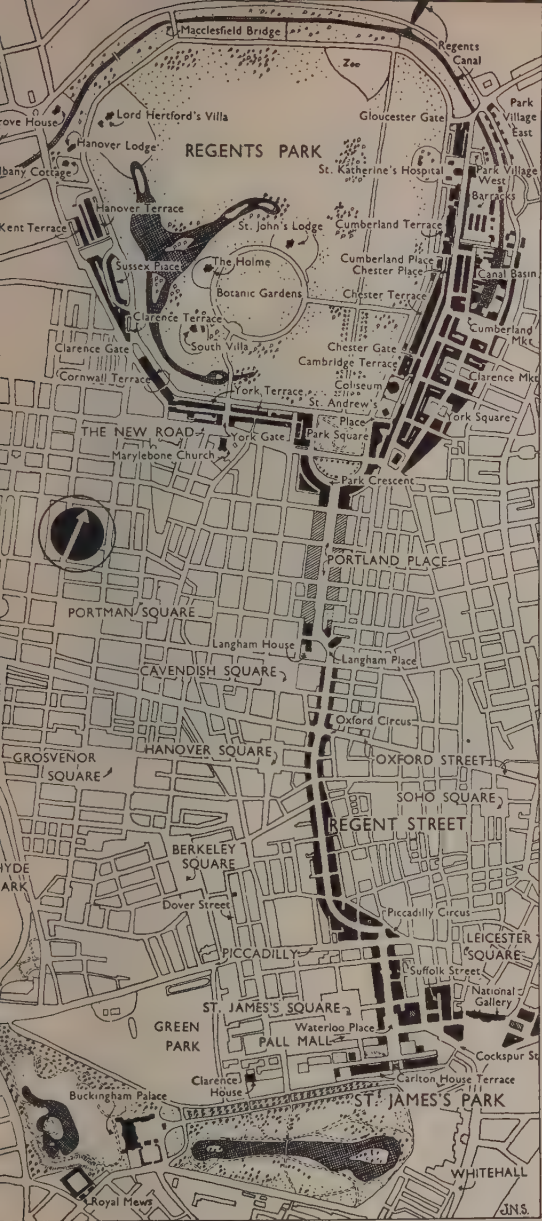


Country Life

The formal planning of the 17th and 18th centuries (above) reflected the rigid code, social and aesthetic, current throughout Europe, as did Wren's famous plan (left) for rebuilding the city. England had not then made her great contribution to the art of landscape design, which substituted a subtle balance for symmetry, and progressive unfolding of views for all-revealing vistas. Nash's layout for central London (right) was conceived in the light of this latter ideal, and started a tradition London should not now ignore

formal kind of street-planning, and one about which something should be said if only because it has become the subject of a certain amount of misunderstanding. There are many parallels between the state of affairs after the Great Fire of 1666 and after the intensive bombing of the winter of 1941, but not enough to make the Wren plan relevant today as a plan. Wren drew it out according to the conventions current in the middle of the 17th century, a time when an hierarchical state of society was represented by a formal, universally accepted, architectural code,

which had not yet become confused by frustrated social and economic aspirations. It had no need to look beyond its own standards of taste and scholarship. Even the original genius of Wren could no more have produced a town-planning scheme different from the formal axial lay-outs that were the 17th century's ideal, than he could have designed buildings without employing the classical language of the Renaissance. But his buildings, though Renaissance in style, are notable, among other things, for the way that in practice he translated Italian formality into



From John Nash by John Summerson (Allen & Unwin)

a specifically English idiom, with a good deal of the intimacy and flexibility, in form and material, of Tudor or Gothic.

In doing so, he partly anticipated the great contribution, already defined as the process of substituting the idea of balance for the idea of symmetry, which 18th-century English architects and landscape gardeners were to make to European culture. And it may well be that if Wren had carried out his London plan, he would similarly have introduced some of these qualities into it. Some of his own buildings in any case play an important

part in the London townscapes, based on a combination of informality and unexpectedness, which are so much more subtle than their Continental equivalents. I have already mentioned the view of St. Paul's up Ludgate Hill, and the spires of many of the City churches, together with the ingenious compositions the architect contrived from their odd, angular sites, are responsible for similar effects. Nevertheless, the most one can say about Wren's plan as such, is that if it had been carried out London would perhaps be a more dignified city in a conventional sense. It would still not be a convenient one, since even the most spacious 17th-century lay-outs are hardly sufficient for modern traffic needs, and the complexity of modern city life is very different from the simple routine of the 17th century. Today, in fact, Wren's plan is not a pattern to follow; it is an example of boldness of vision. But in these days, so much have things changed since Wren's time, where boldness is needed is not merely in a plan's geographical scope but in its human scope, in its thorough acceptance of town-planning's social responsibilities.

The only other ambitious planning scheme in London's history is one that actually was built: that which Nash carried out for George IV. Once more, the social needs it had to serve were not comparable with our own; it was still conceived in terms of the upper-class culture of the Georgian age. But as a pictorial conception its significance can hardly be exaggerated. Nash was working against the background of the newly-evolved English landscape tradition already referred to. His attitude to architecture was itself scenic rather than plastic, and his most notable quality as a designer was the way he co-ordinated an infinite degree of variation in detail into a consistent framework, so that variety was possible without loss of unity. He also knew how to make the use of local divergencies of topography and character, and was never guilty of ironing them out into a formal pattern no more characteristic of one city than of another.

The lay-out of the old Regent Street, and of the sequence of streets that linked it at one end with Carlton House and at the other with Nash's masterly display of scenic virtuosity in the shape of Regent's Park and the stucco terraces surrounding it, form a first-rate instance of balanced as distinct from symmetrical planning. These and other parts of Regency London are rich in the unexpectednesses—the apparently accidentally revealed glimpses of this feature and the half-concealments of that—which give character to a city. Any new plan that London



E. Jarrett

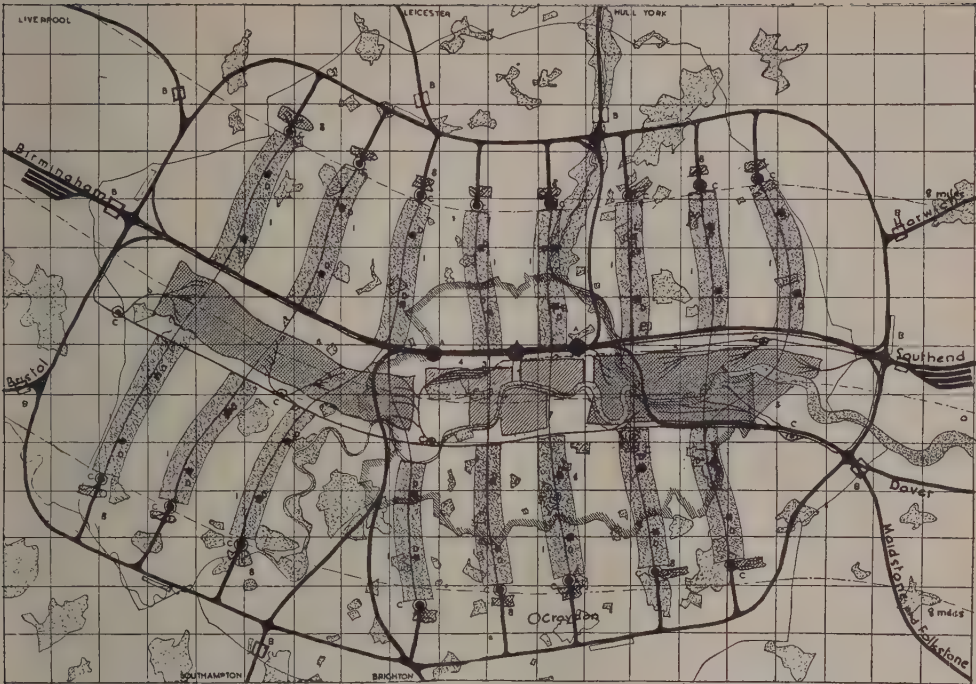
(Above) *Regency London at its best is intimate and neighbourly, yet retains the unity common to all classical planning. Any master-plan on which the future development of London may be based should have enough flexibility to allow local characteristics to be preserved and exploited within the larger functional framework. (Opposite) The M.A.R.S. master-plan, based on the idea of concentrating residential London into self-contained Borough units, allowing strips of open country to penetrate to the heart of the city. Industrial and administrative districts occupy the central areas and through-transport is served by a ring road*

of the 1940's adopts must allow scope for this kind of imaginative visual planning within the framework of whatever major reorganization of parts new social ideals and new scientific resources may demand. The Royal Academy plan does not do so; it is a strait-jacket, imposed on a city whose whole tradition is one of never conforming to regimentation—one of things half seen, sounds half heard, queer juxtapositions and never knowing what may lie around the next corner.

I suppose the extreme opposite to the Royal Academy plan is that published last summer by the M.A.R.S. (Modern Architectural Research) Group. This was decried at the time as being too iconoclastic, because it envisaged a London entirely new in its whole lay-out. It was, it is true, more by way of being a demonstration of certain theoretical planning principles as applied to London, than a concrete proposal capable of being put into immediate practice. The merits of

these principles are too technical to be discussed here; in a theoretical way, some of the Group's arguments are unanswerable; though they still need testing in terms of the actual day-to-day life of human beings. On the other hand, the plan appears in some degree to be guilty of the error of making the transport within a city an end in itself instead of the means to an end. It has, however, these great virtues: its scope is worthy of its subject; it is based on properly analysed social needs rather than on the display of conventional architectural devices; and its framework, though logical and revolutionary, is loose and adaptable enough to allow an infinite variety of topographical and architectural treatment in detail, and therefore to allow not only the preservation of such existing streets and buildings as seem worthy, but the exploitation of existing local character as the basis of neighbourhood planning.

From the foregoing we get three prerequisites for good planning as applied to



By courtesy of the Architectural Review

London. The first, since a city is a going concern, is a thorough knowledge of what the plan has really to provide—of *people's* needs, as distinct from architects' dreams of monumental squares and impressive vistas. This is by no means so obvious as it sounds, for never yet has planning been carried out on this simple basis. We shall, in fact, have broken the back of the task of reconstruction when we get it accepted as a matter of principle that changes shall only be made in the face of our city in response to a public need for such changes. Hitherto, nearly all changes have depended upon whether or not it has been to someone's profit to make them—even municipal street-widening and rebuilding schemes have been dependent on property interests and claims for compensation. This, more than anything else, is what has stood in the way of planning in the past. We cannot pretend that bombing has of itself altered this state of affairs, and the opportunity for replanning created by bombing cannot therefore be looked on as a real one until proper planning legislation has ensured that the same will no longer apply. Furthermore, we cannot plan according to people's needs until these have been scientifically ascertained; so our first *technical* pre-requisite is a thorough statistical and qualitative survey

—which can and should be started now—of the needs that have to be provided for to give a full life to the whole of London's population: a survey of their housing, their industry, their education, their health, their leisure.

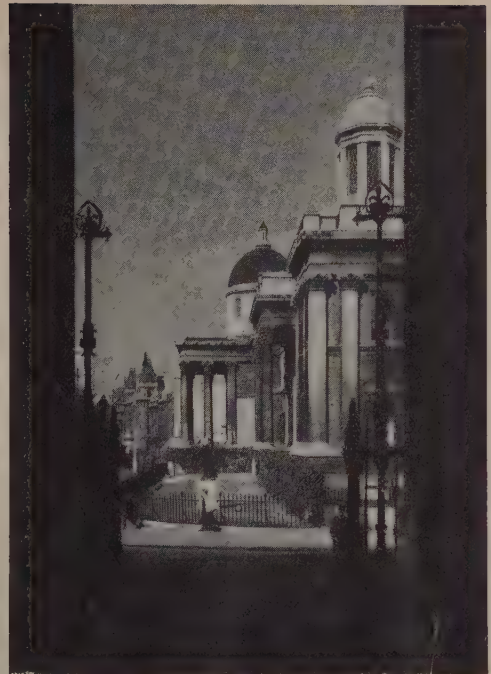
The second pre-requisite is a *master plan* based on the above survey. It need not be put in hand all at once; its purpose would be that of a guide to the form and siting of rebuilding projects as and when circumstances allow them to be carried out. Given a properly worked-out master plan, miracles of improvement can be wrought almost as a matter of routine. In the City of London no less than forty-two per cent of properties were completely rebuilt between 1905 and 1938—just in the ordinary way of business, without any special measures being taken. From the point of view of planning these resulted in no improvement whatever. If a master plan had been in existence, enforceable by law, nearly half of it would have become reality in a generation. It would have been necessary, of course, also, for some form of grouping of building sites to have replaced the present practice of piecemeal rebuilding on existing sites. I have already observed that good planning demands the control of fairly large territorial units.

The third pre-requisite might simply be





E. Jarrett



British Council

The most characteristic views of London's famous buildings are not formal elevations of the whole, as envisaged by the Royal Academy, but apparently accidental glimpses of parts of them, up narrow streets and between the trunks of trees. (Opposite) The Tower of London. (Above) St Magnus, one of Wren's churches, the focal point of a balanced composition. (Top right) The surprising skyline of the National Gallery, 'picturesque', as classical revival architecture is never accounted to be: London is a city of silhouettes rather than façades. (Bottom) One more of those odd and intimate views on which the essential character of London rests



John H. Stone

called topographical imagination, with which would naturally go a genuine respect for historical continuity—for what London stands for as a living entity—not architectural traditionalism, but a sympathetic appreciation of the character latent in *places*, which imaginative planning can bring out. It may only be the character of a familiar street-corner in the East End, where the architecturally 'vulgar' turret of a Victorian gin-palace acquires a dim romantic silhouette when the mist comes curling up from the river; but only sensibility to such trivial phenomena as

this can nourish and preserve the living charm of London. I hope I have made it clear that this is a very different quality from the pastiche of period styles in the name of tradition; that this kind of imagination is not incompatible with the logic and clean lines of modern design. On the contrary, it is one in spirit with its liveliness, its flexibility and its conviction that an underlying sense of order is not a restricting but a liberating influence. Only order imposed from above, without reference to the lives of individuals, dooms a city to stagnation.

East Africa and the Future

by ELSPETH HUXLEY



WHAT is to be the future of our colonies in general, and our African colonies in particular, after the war? This question has come in for a good deal of attention lately, as a part of the quickened interest in the reconstruction of our battered world when the guns cease fire.

One of the points to emerge is that the regional grouping of colonies will probably be developed. Regions such as West Africa, East Africa and the West Indies are likely to be treated more or less as units, and administrative and other links between them to be progressively tightened.

This article is concerned with one group

only: Eastern Africa, that part of the continent that lies between the Indian Ocean and the Great Lakes. Four dependencies are involved: Kenya, Tanganyika, Uganda and Zanzibar. In some ways they have little in common except geography. Certainly they are full of contrasts.

Zanzibar is a small island, dependent very largely on the export of cloves, for many hundreds of years under Arab rule. Its population is a picturesque, polyglot mixture, and the British are there as advisers to the Sultan, who in fact rules the island.

Uganda is also, in the main, a native state. It is divided into four provinces, one of which,

Buganda, is governed by its African king, the Kabaka, and a council of chiefs. Our relations with this kingdom are governed by the Agreement of 1890, made between the British Government and the Kabaka, which the people regard as a sort of Magna Charta; they are always very nervous about any suggestion of altering the present arrangement. A large part of Uganda is cotton country: a closely cultivated land of peasant proprietors and landowners who do very well out of small-scale production of this export crop.

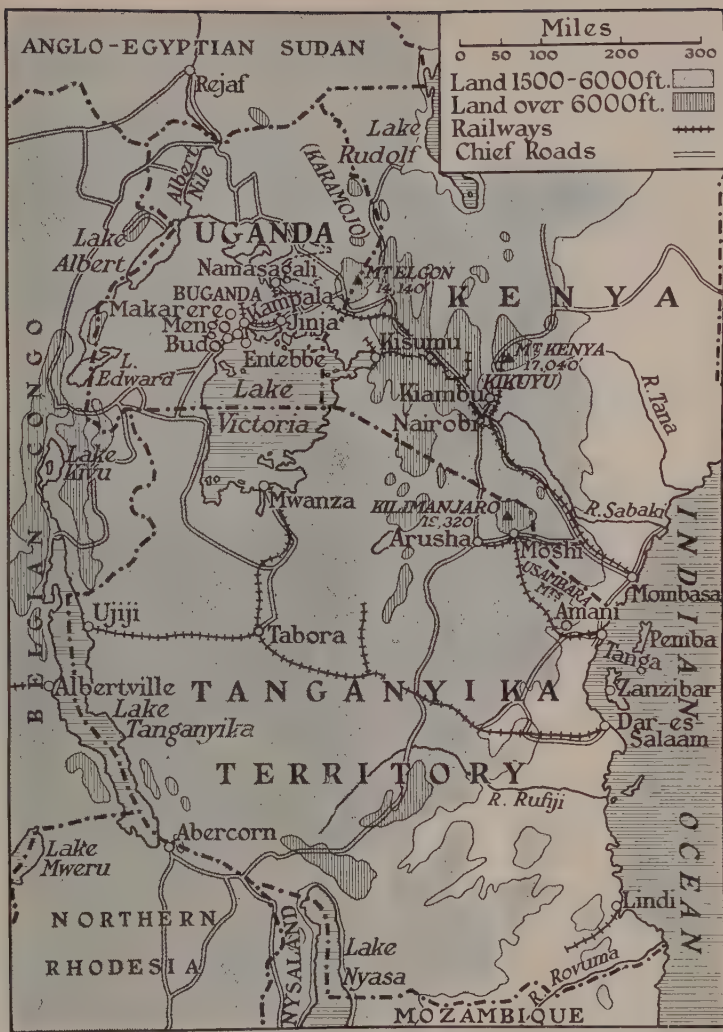
Kenya is the only Crown Colony among the group. Politically it is complicated by the presence of European settlers, but it has an African population slightly larger than that of Uganda (three and a quarter millions as against three), and less advanced. It is a country of singular beauty and variety, in products as well as in people: plantation crops like coffee and sisal, tropical ones such as cotton and groundnuts, temperate products like butter, cheese, bacon and meat, as well as cereals, such as maize, millet and wheat.

Tanganyika is different again. Politically it is held under a League of Nations mandate, which has made its status rather vague and its future uncertain. It is the least developed country of the three, with the largest population (five millions), but poor communications, and the fact that over two-thirds of its area are in the tsetse-fly belt has hampered progress. Its main wealth comes from gold-mines in the south, from plantation crops near the coast, from a fertile area round Mount Kilimanjaro, where both Africans and Europeans grow coffee, and from cotton and

groundnut cultivation south of Lake Victoria.

There, roughly sketched, are the four dependencies: three countries and an island. Together, they are as big as the British Isles, France, Spain and Italy combined. Their native population is roughly twelve millions, the total number of Europeans only about 35,000. In addition there are Indians, who to a large extent control the retail trade, and own most of the property in the towns; and the Arabs, relics of a proud imperial race who dwell along the coast in what was once the empire of Azania.

The boundaries of these three mainland territories are purely artificial in origin. They



Stanford, London

follow few natural lines, and sometimes even bisect the country of a single tribe. Yet, absurd as it may seem, these British dependencies have already developed quite a flourishing nationalism of their own, which is sometimes carried to ridiculously petty lengths, as when the Governor of one country forbade the officers of his administration to spend their local leave in the neighbouring territory. In spite of such handicaps, however, things have been moving steadily but slowly in the direction of closer grouping. There are East African Customs and Postal unions. Kenya and Uganda jointly control their railway. Research is concentrated at central places which serve East Africa as a whole. The Governor's Conference, with a permanent secretariat, is one of the latest attempts to bind the countries together, but it has not as yet been very successful.

What is really needed, most people agree, is some central driving force that will propel the cumbersome engine of government at a much faster pace, and in a chosen direction. At present it is rather like a heavily-laden truck, or rather three trucks, that are pushed along, first one way and then another, by all sorts of different people, with different destinations in view.

The solution most generally favoured is to group the territories under a single head, a Governor-General. Many of the powers at present exercised by the Colonial Office would be transferred to him and his staff, and he would have to be free of the cramping restrictions and controls by which ordinary colonial governors nearly always feel themselves bound. To advise him he would need a council of representatives of the various peoples, tribes, interests and officials of the territories concerned, since it is still out of the question to set up a fully elected and responsible parliament.

Lately General Smuts and Lord Hailey have come out in favour of Regional Councils, to guide and advise, though not to administer, different areas. For East Africa, representatives of Britain, South Africa, Belgium and the East African group itself would presumably sit on the Council, and possibly other interested countries such as the United States and India.

The mere reorganization of the government machine obviously would not, in itself, provide a dynamic impulse for African development; but it would provide a channel along which such an impulse could smoothly flow.

Politics are not everything, and many people agree with the main conclusion reached by Negley Farson after his tour of Africa recorded

in *Behind God's Back*: that, on the whole, Britain has done pretty well in the field of politics, justice and administration, but has failed on the economic side. Our post-war policy will have to concentrate on economic matters to make up lost ground, and because in these undeveloped, poor and struggling countries, economic matters are of the very first importance. One might say that the first aim of our policy in the immediate future should be to raise the standard of living of the whole people.

This means advance not only in material things such as housing and food, but also in education: the provision of more and better schools—this is what the people themselves most ardently want—improved medical services, more technical research and training, and a far more intelligent effort to develop, or perhaps to instigate, African art and a sense of craftsmanship. When we talk about improving standards of living, our minds (being British minds) usually dwell on sanitation, clinics and workmen's compensation; but there is no reason why we should not think just as much of a more gracious as well as a more comfortable style of living. To my mind it would be as much a sign of an improved standard of living if an African spent his savings on a good painting, or on a set of tools for wood-carving, as if he concentrated on a septic tank or on eating off plates instead of from a bowl with his fingers. This, unfortunately, has not been the view of most of our reformers, who believe in utility first.

In housing, the dismal imprint of the Public Works Department has been stamped on most of our colonies, soulless and uninspired, and the outlook has affected not only the colonial peoples themselves, by giving them no standards, or false ones, but also our own attitude towards the colonies. There is a vague and perfectly sound feeling that the 'noble savage', erect in all his paint and unwashed glory, is in fact a more attractive and glamorous fellow than his civilized brother, clad in a neat drill suiting, fully conversant with the decimal system and the Plantagenet kings. There are other sides to our civilization than the materialistic, and I think we shall have failed in our efforts to raise the standard of living if we present to the Africans only the wash-behind-the-ears and drink-more-milk aspects.

To raise the standard of living, then, as I have suggested, we must in future pursue a more vigorous policy of development and building-up of resources. I am not suggesting that we have sat still and done nothing all these years. On the contrary, in East Africa

schools, and yet more schools, is the cry in Africa. Here are two: (left) a 'bush school' in Kenya, run by one of the Missions, and (right) part of King's College, in Uganda, showing that Western architecture does not always rise to its African opportunities



Paul Popper



Dorien Leigh

Markets, like everywhere else, are changing fast: (left) the old style, still to be seen—but note the 'market master' who sees that fair prices are paid; (right) the Municipal Market in Nairobi, a well-planned modern building where Europeans and Africans can sell their wares



Paul Popper



Dorien Leigh

dairy-maids old and new. The Kabaka of Uganda has a staff of dairy-maids who carry milk, in traditional style, to his queen and her attendants. But in Africa generally 'clean milk' was not one of the social evils, and the Governments are now trying by lectures and demonstrations and travelling inspectors to put across the idea of cleanliness in handling milk. The Kikuyu woman on the right (from Kenya) is doing what she ought—she is the wife of an Agricultural instructor employed by the local Native Council of the district



Dorien Leigh



Paul Popper



Paul Popper



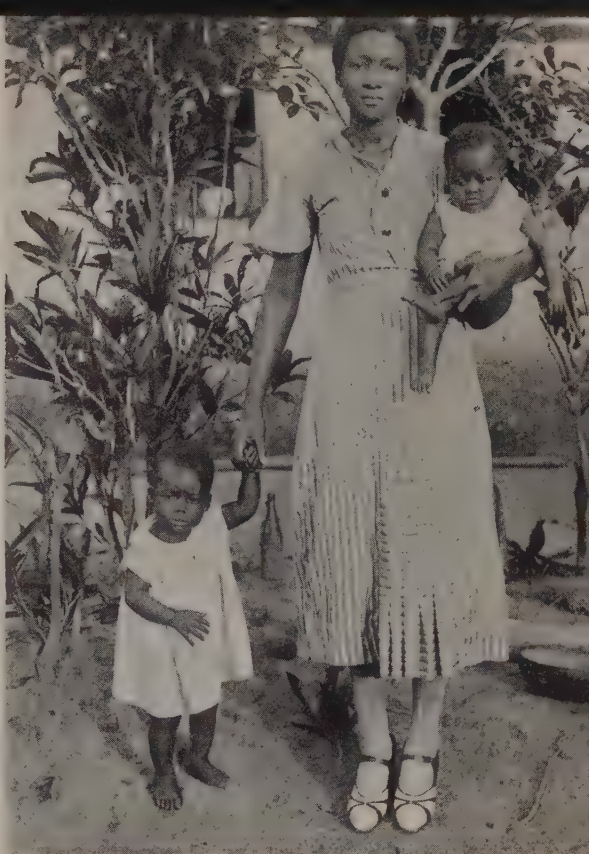
Over-grazing is one of the most difficult of East Africa's problems. The semi-arid pastures, like this one (above), have in many cases been reduced almost to desert by herds of 'uneconomic' cattle.

(Left: top) Housing and dress are changing rapidly and will change more. Old-style villages like this—still the standard kind of housing—are shared by humans, goats, fowls; the huts are innocent of windows or chimneys; (bottom) the women wear goatskins and many yards of copper wire round necks, legs and arms. This picture shows the mud hovels in which the Masai tribe live

there has been a creditable record of steady progress ever since the last war. In fact some really remarkable things have been achieved, especially in the way of getting diseases under control, reducing mortality rates and setting up hospitals and clinics. Schools have been opened up all over the place: mostly little bush schools where both plant and education are pretty crude, but also much more ambitious places such as the Alliance High School near Nairobi, King's College at Budo in Uganda, and the school for chiefs' sons at Tabora in Tanganyika. And then of course there is Makerere, destined to become the university for Eastern Africa, for which grants totalling half a million pounds were made by the three East African Governments. New crops have been introduced and old ones improved, marketing reorganized and streamlined,



Dorien Leigh



Dorien Leigh

Going to market in Tanganyika (left), with goods carried in the traditional way, on the head. 'Civilization' in Africa generally means European clothing, first of all: this woman (right) (from Uganda) has travelled a long way from the more primitive state enjoyed by the Masai woman with her skins and wire ornaments

cattle diseases controlled, Africans trained in many kinds of skilled work, new railways built, harbours improved and air lines started. The list is long, and it is one that we need not be at all ashamed of, or nearly so reticent about.

But there still remains a lot that has not been done, or not been done properly, and it is on this we should concentrate after the war. My personal opinion is that first of all we should tackle really seriously the matter of conserving soil, forest and water, and of planning their development for East Africa as a whole. This includes the vital and complex questions of soil erosion and over-grazing, though they are only part of it. Water supplies, one of the most important factors in East Africa, have to be safeguarded and developed by systems of dams and bores. Afforestation has barely been begun. Soil

enrichment needs the introduction of composting on something like a Chinese scale, and a determined effort to make rotations and mixed farming the rule rather than the exception, and to put a stop to shifting cultivation. There is the problem of improving natural pastures, which at present are not improving, but steadily deteriorating. The little matters of tsetse fly eradication and irrigation need attention. There is still a vast amount to be done in the way of scientific research to improve crop yields and quality and disease resistance.

The soil, the water and the forests are the only three fundamental natural resources, out of which everything must be made and built. (Minerals seem likely always to play a secondary part.) At the same time we have got to tackle another problem before it gets too big for us; over-population in relation to



Dorien Leigh

Medical services have made great strides, and in future will be enormously expanded. (Above) A Kikuyu woman (from Kenya) has got over her natural fear of magic and takes her baby to the clinic. (Below) Africans trained as laboratory assistants in Namirembe Hospital, Mengo

Dorien Leigh



the resources of the land. It may seem absurd to talk about over-population in a country where the rate is only about fifteen people to the square mile. But everything depends on what these people do for a living, and what the square mile is like. In East Africa, practically everyone either grows crops or herds cattle, and very few of the square miles are good ones. Although it is quite true that if planning is on a regional basis, and if real energy is put into the job of land improvement, water control and tsetse eradication, it will be many years before population density approaches saturation point, it is still a fact that certain areas are already over-crowded and others fully occupied. We have got to move soon and fast if we are to avoid the troubles of a landless population untrained for other jobs.

There are obviously three principal lines to follow. First, re-settlement in new areas, perhaps in those reclaimed from tsetse-ridden bush, or opened up by providing water supplies—which must be properly controlled and planned. (One might instance the land settlement being carried out in the American West as a result of the Grand Coulee and Boulder dams.) Second, the training of men and women in those secondary occupations which arise out of and enrich a flourishing agriculture. I mean the sort of skilled trades that serve our own English farmers in small country towns: blacksmiths and wheelwrights, seedsmen and engineers, saddlers and shoemakers, mechanics and builders and all the rest. No attempt has been made in East Africa as yet to build up really live, well-planned villages or small towns revolving round the markets, where such skilled men would be able to set up shop and establish themselves.

The third line is the much-discussed matter of secondary industries. In the past these have been frowned on by the Colonial Office, but now it seems agreed that they must be fostered and encouraged. The war has given a fillip to those that could be set up without much elaborate machinery. In Kenya, for instance, two very successful plants have been started for drying native-grown vegetables. Blankets, boots, sacks, glass, to mention a few other things, are locally made. But this is only a small beginning.

The biggest problem to be tackled, in my opinion, is the problem of power. So far as we know, East Africa has no oil or accessible coal, and very limited timber reserves. Industry on any scale can hardly pay if fuel has to be imported. The only possibility of overcoming this seems to be the generation of electricity by water-power. As a matter of

fact East Africa is not well off for water-power either; but there are rivers and there are waterfalls, and the only hope would seem to lie in a few big hydro-electric schemes for the whole area, centrally controlled. If you could have an East Africa grid bringing cheap power to small towns, you would open up a whole new world of possibilities. Not only could fairly large industries be established, but the power could go to the villages and towns, and enable small local industries to start: for instance, flour mills, little weaving centres such as flourish today in Scotland and Wales, tanneries, small furniture factories and so on. And gradually these small towns could develop into cultural and social centres, well planned (we hope) and orderly, as well as growing-points of economic life.

Education, health and the other social services are, of course, vitally important, and are certain to expand. But everything depends on whether they do so as a form of common effort, or as a form of paternalism. The danger of our colonial policy is that it sets up the Government as some remote and god-like thing that rains down benefits and penalties with all the unpredictable whimsicalness of Zeus sending thunderbolts or blessings. Do people want a school, hospital, a new market? Let the Government do it. Are cattle dying, is firewood short, are wells drying up, has the bridge broken? The Government will see to it. That attitude is becoming a menace in England: it is a hundred times more dangerous in Africa, even though, under indirect rule, the chief and his council are actively encouraged to wield stronger and wider powers. But if partnership, now heralded as our new colonial policy, is to be made a reality, the African people must get a more lively sense that it is *their* business, not just the Government's, to put things right, and to organize and direct their own lives.

All this must be a matter of education in the widest sense—not just schooling of children, but quickening the intellect of the whole people, from infants to grandparents, inspiring them with a sense of purpose in life.

It is here, I think, that our colonial policy has most conspicuously failed. In the past education was introduced piece-meal by different authorities, mainly by the Christian missions, all of whom had their own ideas, without any serious attempt to think out what really was the best kind of education for Africans in the particular conditions of their continent. The result is that, on the whole, it has tended to be an inferior reflection of our own English system—schooling, not education. To become literate has been the first

aim and object, but the emphasis has been on how to read, not *what* to read; on the means, and not the ends. The result is, as everyone knows, that in nine cases out of ten the 'educated African' is a rather pathetic, dissatisfied, unhappy figure, his head stuffed with unrelated facts and figures, but empty of a sense of direction; feeling himself to belong to a different world from that of his more ignorant kinsfolk, yet not belonging to, or accepted by, the white man's world. The thing that has struck me most about almost all the 'educated' East Africans I have met is that they are not happy men. Life worries them; it is too difficult. Yet the African in his 'natural' state is one of the most cheerful, high-spirited of men. We seem to have educated the laughter out of them.

People who have studied education probably know the remedies—for doubtless there is more than one. My own feeling is that the only kind of education likely to bring either personal happiness or social adjustment is to learn how to do really well something that you like doing—generally some craft or skilled work for which you have an aptitude. It may be how to grow better crops or breed better cattle; it may be how to make furniture, build houses, design pots, carve figures, make shoes, paint pictures, heal diseases or study insects. In order to do successfully any one thing, a lot of cognate studies are involved; and from the mastery of one craft or skill a man can proceed with confidence into wider fields. This would suggest greater concentration in future on the teaching of arts, crafts and domestic economy, and various kinds of manual skill, and the introduction of a widespread apprenticeship system. The beginnings of it exist in, for example, Railway and Public Works Departments' workshops; but

it may prove to be desirable that almost every youth and girl who wishes to rise above the level of unskilled worker should go through some form of apprenticeship.

All this, of course, will need money. Up till the last year or two, the British Treasury has enforced throughout the Empire a rigid policy by which every colony, however small and uneconomic, has had to be self-supporting—to raise itself by its own boot-straps. A few failed to do this, and they sank into what was regarded among colonies as a very low state indeed—that of recipients of a grant-in-aid. As a result, progress was extremely slow. I believe Professor Macmillan has calculated that at the present rate it will be 350 years before all the children in the Gold Coast (a rich and advanced specimen among dependencies) get an elementary education. The passing of the Colonial Development and Welfare Act of 1940, with the money set aside to implement it, has altered the situation, and social services may be increasingly subsidized by the British Treasury after the war. All the same, it would be unwise for East Africa to count on too much outside help. In the long run, it will have to finance most of its own social services. This brings us back to the need for development, from which alone the money for social progress can be found. The whole question of finance for development will have to be considered, for it seems unlikely that ordinary private capital will be able, or would be encouraged, to do the job by itself. The active help of the Government would obviously be needed, and there seems to be a good case for experimenting with public utility corporations.

I have left till last the whole question of control of the colonies by international bodies. The consensus of opinion now seems to be that



Forty years ago, goods carried from the coast to Uganda on the heads of native porters took four months, and cost £100 a ton to transport. Now, the Kenya-Uganda Railway links the Indian Ocean to the Upper Nile, and here is a train crossing the Ripon Falls, near Jinja, where the Nile issues from Victoria Nyanza

Dorien Leigh

it is not possible to divide responsibility between Britain and some sort of international Commission, although of course various international agreements would modify and limit Britain's powers, as they do already. (How many people know that over the whole of this East African region, no preference has ever been given to British goods or traders over the goods or traders of foreign nations, under the provisions of the Congo Basin Treaties?) But this does not mean that international cooperation in developing the colonies need be ruled out. Finance need not be wholly British, and public utility corporations might have a board of directors drawn from several countries. These men would not be able to sit and argue about each other's principles—they would have to agree on a plan, and act. I think in this way you would be more likely to get real international cooperation than if you had some sort of super policy-reviewing body to which everyone would have to report.

In East Africa, and particularly in Kenya, British policy has followed the purely negative line of trying to hold the scales even politically between the various races—European, African and Indian. It would be interesting if the British authorities were to try, for a change, something more dynamic. Here you have a region with three races living in it, at different stages of development, with different cultures and ideals and ways of life. Yet it is not an old-established country, with fixed customs and traditions and institutions: life there is still fluid. Can these three races be persuaded to cooperate fully in the building of a flourishing new state, in whose prosperity all could share? Can race antagonism be softened or kept under, and partnership really be made to work? Can the country as a whole—the

new East African region which has yet to be welded together—go forward on the basis of fair opportunities for all, freedom from bureaucratic costiveness, and without the erection of a colour bar?

These questions have yet to be answered; in fact they have yet to be put. On their answer a lot depends—the future, perhaps, of much of the British colonial empire; for we cannot expect it to run smoothly after the war on the lines that have proved sound enough in the past. Can British colonial ideas change also? I think they can, but only if a conscious effort is made to change them. History shows that people do not easily become sensible and far-seeing and cooperative, nor do changes in points of view come about quickly, if things are allowed to take their course.

But science has given us modern weapons which can mould a people's outlook: the weapons of propaganda. The Nazis have shown us how quickly and effectively the outlook of a whole generation can be fused and directed towards evil ends. Cannot these weapons be used to direct opinion into channels which we regard as good? Probably we *could* bring about a willingness among all races to experiment in real partnership, if we had the will to do it, and the clear-mindedness to know what we wanted to do. But have we? And who are "we"?

Time will answer these questions. So far as East Africa is concerned, two things are wanted, for a start. A strong Government in Britain that knows what its colonial policy is, and how it means to get that policy carried out. And a strong, able, courageous and imaginative governing authority in East Africa, given by the home authorities trust and time, and considerable local powers to get its ideas carried out.



Dorien Leigh

The Isle of Djerba

by W. M. COUSINS

THE broad-beamed Tunisian *qarib* slips from her moorings at Djorf, her great sail full of the hot south wind. Africa, with heat and turmoil and strife, sinks away astern; it is lost in the haze, while the ship glides over the waters of the Sea of Bou Ghara, that are never, say the fisher-folk, troubled by a storm. Ahead lies Adjim, a forest of masts, the gateway to this island of Djerba near Gabès—a little world apart, having its own history, customs, beliefs, an epitome of the whole cultural history of the Mediterranean. Severed from Tunisia by this shallow ochre sea, the island has the fascination of a dream.

For 3000 years Djerba has cast a spell over the imaginations of mankind. In a tormented world it has stood as a refuge, a Happy Island of supernatural peace. "Many sea-leagues hence, in the Gulf of Gabès, lies a marvellous place where the birds sing in the green thickets and the air is so pure that men forget to die," thus, in Flaubert's strange romance *Salammbô*, Matho, the tortured warrior, relates its legend to Salammbô, princess of Carthage. Homeric Greeks called it the Land of the Lotus-eaters, where mariners ate of a magic fruit whereby they straightway forgot their home and fortune and stayed on the Isle, content with dreaming, oblivious of the past. Here also lay Ogygia, where Ulysses found the bower of Calypso and lingered for seven years, enraptured by her spells. Lake Triton, the nereid-haunted sea, was part of the Mer de Bou Ghara.

Later, upon the southern coast, the Greeks built their city, called Meninx, famous for beauty and the arts. Romans and Byzantines ruled the Isle, and two Emperors (of little worth) were raised to the purple in Meninx. Temples and towns were destroyed; one relic of Roman rule is left, a huge causeway, seven kilometres in length, uniting the city to the mainland across the shallow bay. Still visible eighteen inches below the waves, it is known as the Tariq el Djemal, the Camels' Road. Long since the pathway was broken by a wide gash, where the independent islanders had torn down the stones to keep out the tyrants of Africa.

El Kantara, a cluster of whitewashed houses, now holds the place of Meninx; at this point travellers disembark, if they have come by the Zarzis route. Eastward on a long



promontory stands a medieval castle of stone known as the Bordj Castille; it was built by Roger de Loria, a knight of Arragon who in 1284 conquered the isle. Three generations of de Lorias dwelt here, keeping watch and ward for the peace; before them shone Africa, menacing through the haze, behind them lay the gardens of the Happy Isle, where the birds sang in the thickets. Then the last of the Lorias grew tired of lotus-eating, and sailed for Spain, ceding his lands to Frederic of Sicily, who failed to maintain his power.

For a while the island had no master; but at Houmt-Souk, an open roadstead on the seaward side, rich galleys, flat-bottomed and of shallow draught, came to the shore to trade their wares. The market paid no dues or tax and became the richest in the south, frequented by traders and caravans from afar. In 1560, when Spain was at war with Tunis, the Viceroy of Sicily determined to re-establish here the Spanish power. He sent an Armada, routed in Djerban waters by the corsair Dragut; but he held the island long enough to build the Bordj el-Kebir, a brown stone castle at Houmt-Souk on the shore. Here he left a garrison of 500 men, under his trusty lieutenant, Don Alvar de Sandes, and they were besieged by Dragut. Driven by thirst, the desperate garrison tried a sortie, and were massacred to a man. The corsair built a great Tower of Skulls, made of their bones set in cement, upon the beach; in 1848 it was destroyed and the remains were given Christian burial. The islanders broke down the Tariq el-Djemal, excluding both the Christians and the Bey; and the rival overlordship of



Paul Popper

(Above) *The Mosque of the Strangers, Houmt-Souk, has a square minaret, mark of the Malekite sect. It dates from the 15th century, when, the Islanders being considered heretics, it was built for the use of merchants from the mainland. (Right) The Spanish fort, Houmt-Souk, where in 1560 Don Alvar and his knights fought to the death against the corsair Dragut, who built a tower of their skulls. (Opposite) The lourde, a broad-beamed fishing-smack built at Adjim, ferries passengers across the Sea of Bou Ghara to Djerba*

W. M. Cousins





Paul Popper

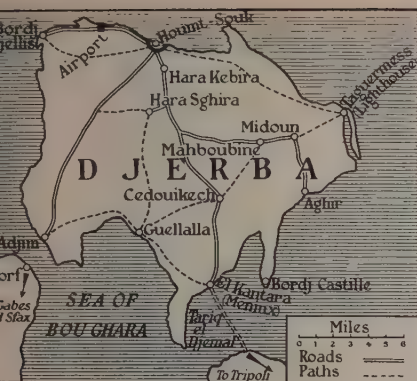
Tripoli and Tunis did not disturb their peace.

This island, for which so many knights contended, is small and low. Twenty-eight kilometres long by twenty-two wide, it contains neither cliffs nor mountains, neither springs, nor rivers, nor woods. All its water is from rain and from the abounding wells that irrigate the fields during the summer heat; yet it is a place of immense fertility, fresh with greenery in spring, dry and windy in summer, fruitful in autumn, though brown with dust. The mainland of Africa is here harshly arid, and only sixty miles away begins the desert of Sahara; yet Djerba is rich in grain. There are no towns on the island, for even that proud capital, Houmt-Souk, has but 5500 inhabitants; yet this is one of the most thickly-peopled parts of Africa, outside the Nile valley, and has over 220 persons to the square mile. There are 52,000 Djerbans, of whom 4000 are Jews and only a few hundreds

Europeans—Maltese and French. There are 5600 farmers owning their land—usually twelve acres or less, but enough on this fertile shore.

Nothing is wasted in Djerba; the verges of the road are pasture for tethered goats or cows, and of the island's 55,000 good hectares, 50,000 are incorporated in farms, the rest being roads or dwellings, or the uninhabitable fringes of the sea. The land produces hard wheat, barley and sorghum, beans, olives and dates. There are one and a quarter million date-palms in the island, besides half a million olives, and an equal number of fruit trees and vines, giving an average of some sixteen economic trees per acre, without handicap to the ploughed, productive fields.

There are no woods on the island, but every house has a thicket of flowering trees—orange-trees, lemons, apricots, pomegranates, varied sometimes with shrubs, like the oleander,



(Opposite) *At the well:* Djerba has no rivers, but ancient wells yield water in abundance for her farms. Over their veils the women wear a conical 'witch's hat', derived from the classical petasus. (Right, top) A Djerban menzil, or castellated farmhouse, with square turrets for defence against sea-rovers. The ground-plan, with gate-house, courtyard and towers, suggests the outline of a medieval castle. (Bottom) At Hara Sghira, a Jewish settlement of vast antiquity. Jews of Djerba claim that their ancestors fled thither at the epoch of the First Captivity



Paul Popper

grown for beauty alone. Farmhouses, called *menzils*, are square-built, with turrets at the corners, constructed for defence in corsair days, inspired perhaps by Roger de Loria's castles. For lack of long timber, buildings are roofed with a dome, or by those curved ceilings, like half a drain-pipe, called *ghorfas*. Near every dwelling rise the two great horns of a well, whence water may be drawn when the rain-water cistern runs low. There are numerous wells round Midoun and Mahboubine in the centre of the island, which yield good, sweet water in abundance. Here the fruit trees grow thickest and the gardens are most rich.

The Djerbans love their island. An independent, self-contained people, they often fare overseas in search of fortune, but, wealth attained, always return to these gold and azure

shores. A menzil, a Djerban wife, gracious and slim as a roe, these are the prizes for which they have striven. An old peasant, wearing turban and robe, looking as though he had never left the shades of Islam, may have journeyed to Tunis, to Paris, even to New York.

Ask any Djerban lad what he hopes to become when grown up, and he will answer *épiciér* (grocer, to him the best of all trades). Often the menzil is only a pleasure farm. There are more than 120 millionaires on Djerba—millionaires, that is, in francs; but this is a region where the ordinary workman is prosperous on a few francs a day. They are kindly people, hospitable, talkative, sardonic, for like Ulysses they have known cities and men.

Old ways are preserved on Djerba, though the people do not know the enormous anti-

quity of the customs they maintain. Women in the fields wear the veil and above it a conical straw hat with a narrow brim; a classical scholar will at once recognize this as a *pétasus*, a straw hat worn by Roman slaves and depicted on graceful Greek women in Tanagra figurines. The farmers' garb, kilted short, leaving the legs bare, is curiously like the Grecian tunic. Potters of Guellalla, who throw their clay on the wheel and fire their wares in antique ovens of earth, are unconscious that they have produced pottery—amphoras, cratas and jars—of perfect Grecian line. Meninx was famous for fine cloth of brilliant tincture, especially the Tyrian purple obtained from the shell-fish, murex, and Djerba through all vicissitudes has preserved the dyer's art. The murex has been forgotten; but dyers of Houmt-Souk use traditional dyes—madder-root, pomegranate-rind, and a Tunisian scarlet cochineal insect, called kermis, found upon oak trees. Cloth is dipped in a stone vat, fixed, in this modern age, with copper sulphate and hardened with alum. Such dyes are everlasting. Magnificent hues come out of the vat, crimson and burnt-umber, blue and clouded purple, and—badge of Islam—clear, burning, ineluctable green.

Weavers still ply their trade. Women use the upright loom, known to the Greeks, weaving their homespun wool into garments and carpets: those stout Djerba rugs of dark crimson, embroidered in black and white. Men, trained under the 'Service of Education and the Fine Arts', use the horizontal loom, an elaborate modern machine. The shuttle is thrown by hand, threads of the pattern being raised by a flat stick. Here a man weaves a web of chestnut silk with an apple-green stripe, there a heavy crêpe of emerald with a band of pure gold, ordered for a Moslem wedding. Djerba has a weakness for gold; the women do fine embroideries in gilt thread that are sold in Tunis, but for their own wear they make bands embroidered in black and scarlet thread to enliven the borders of their white kirtles.

Near Houmt-Souk dwell the Jews, who claim that their forbears fled to the island at the time of the First Captivity, some 2700 years ago. They inhabit two villages called Hara Kebira and Hara Sghira, where they follow the trade of goldsmith. Since Djerba is rich, few women lack jewellery of silver and gold and delicate filigree, made with hereditary cunning over the braziers of the Jews. Moslems show no hostility to the Jews; in-

deed the Djerbans speak with pride of the antiquity of this settlement, made before the Hagira. Formerly Jews were subject to the restrictions laid by Islam on non-believers, and were forbidden certain trades; so to this day perfumers, mercers and coppersmiths are Moslems, but Jews are silversmiths.

Special costumes mark the Jewish religion. The men, tall, handsome Israelites with bushy black beards, wear a striped robe and black turban, in place of the white clothing that is the local fashion for Islam. Their wives are yet more



Paul Popper

A Pottery-Kiln at Guellalla. Meninx, the vanished Grecian city, left to the island of Djerba a heritage of Athenian culture and crafts; and the Djerban potter's wheel still turns amphoras and cups fit for a Greek symposium (feast of wine)



Paul Popper

This Jewess of Hara walks unveiled, "clothed in scarlet", "with ornaments of gold upon her apparel" as the Song of David says. The goldsmith's and silversmith's trades are reserved for the Jews, who in their Synagogue keep treasures of fine silver-work

glorious; where Moslem women walk veiled, Jewish women walk crowned. Every woman on her marriage assumes the diadem, a high tiara of stiffened cloth sewn with spangles and pieces of gold. It might seem to derive from the fillet, that pointed coronel of cloth that was a ritual ornament in Greece and Rome. Their dresses are colourful, their bearing confident and free; these are Jews of Djerba, members of an ancient and honoured community, accustomed to meet with respect from all men.

Near Hara Sghira stands their synagogue, called El Gheriba, the Stranger, the Solitary One. It was named from a Jewish maiden of rare beauty, who came from a land unknown and led at this spot a life of solitude and prayer, till miracles attested her knowledge of the Divine. Here, it is said, was found a tablet called Sifer, containing words of Moses; and on the 33rd day after the Passover, the Finding of the Tablet is celebrated by a great pilgrimage attended by Jews from all parts of Africa. The synagogue is not very old—its decoration

suggests that period of belated splendour which touched North Africa in the early 19th century; but it is crowded with treasures. Silver tablets on the wall commemorate former worshippers; a hand of ivory and diamond, mounted on a wand, is used as a pointer by readers of the Law. The community possesses several ancient copies of the Torah, the finest being a roll, stated to be 2000 years old, kept in a shrine of silver let into the wall. A savant, collating Biblical texts, might do worse than consult Hara Sghira.

In the many months the Isle has been in the hands of the Germans, one hopes they have not looted the silver shrine and destroyed the Lonely House of Prayer.

Near by stands the caravanseraï, or Pilgrims' House, for the relief of those who come to the Feast of Sifer. Like a fondouk, it is built round a courtyard, the pilgrims sleeping in cells upon the upper floor. The house is in the charge of three women, 'Three Ages' of Jewish womanhood. The eldest is white-haired, her dress is grey and white, and above

Wealth from the sea: fishermen of Adjim drawing their nets, laden with spoils of the Sea of Bou Ghara. Sponges and pearls, famous since Roman times, add riches to these shallow waters

Paul Popper



her worn, sensitive face her diadem shines dimly, like oxidized silver. The second is black-haired and merry, laughing as she sits on her heels frying supper over an open fire on the cobbles; her dress is scarlet and white, her diadem shines with gold. The third is too young to wear the crown-matrimonial; she is twelve years old, garbed in a long blue dress, her hair covered with a scarf of gold and apple-green. She is shy and lovely, and her name is Aziza, the Beloved.

The Moslem religion centres at Houtm-Souk. Djerba, always individualist, in accepting Islam adopted a heretical form, the sect of the Wahabites. The Turks, who once ruled Tunisia, belonged to the Hanefite sect; but the bulk of the population were Malekites. The mosques built by the Turks have as a rule a round or octagonal minaret; those of the Malekites, a square tower. The Grand Mosque of Houtm-Souk is the Djama' Truk, or Turkish Mosque, with cylindrical minaret and many domes; it was built in the 16th century when the Spaniards had gone, and when the Turks withdrew in their turn it was abandoned to the Wahabites. For the use of visiting merchants the Mosque of the Strangers was built, with a square Malekite tower, whence one can see the full panorama of the town, roofed with cupola and dome, blue and white between the azure sea and grey-green olive groves. This mosque was built in the 15th century, when Djerba had no master, but her souqs were thronged with the dignified merchants of Islam from Tripoli, the oases and the Fezzan.

There are more than two hundred mosques of Djerba, found in wild and unexpected places, perched upon the borders of the sea, or in a green, neglected grove of trees. Loveliest of all is the Djama el Kateb (the Mosque of the Scribe), at Mahboubine, a strange, graceful pile of arches and domes built by the Turks.

The men of Adjim, El Kantara and Aghir are not farmers but fishermen. They work as boatmen and divers, seeking not only fish but also sponges and pearls. The pearls of Meninx were famous.

All seas of Djerba are shallow. Houtm-Souk, hardly by modern standards a port, is surrounded by reefs and sand, so that the coastal steamer, which in time of peace used to ply once a fortnight between Tripoli and Sfax, was compelled to anchor four miles out and send passengers ashore in fishing vessels. There has never been a regular air line to Djerba, but the French Government had constructed an air-port at Sidi Salem upon the northern coast. Two lighthouses, at Bordj

Djellis and Taguermess, mark the promontories of the Isle; of the Taguermess Light the islanders are very proud, and boast that it is the largest upon the North Coast of Africa. The war has turned the Sea of Bou Ghara into a seaplane base.

These mild seas have bred their own type of craft. Djerba seamen use *qaribs*, sailing-ships derived from the Arab dhow, wide in the beam, of shallow draught, flat-bottomed, with overhanging bow and raking mast. The smallest type of qarib is the *lourde*, of less than three tons, drawing but fifty centimetres of water, carrying one lug-sail and a jib. This boat, used by the fishers of Djerba and the Kerkennah Isles, is tubby and safe—"run her ashore where you will, she cannot overturn". The *sāndal* is a flat-bottomed qarib, narrow at stem and stern, with two sails; these are now built only at El Kantara and used to ferry passengers across the inland sea. The *chabec*, now only known southward of Sfax, is a version of the *xebec*, the Pirate's Barque, terror of the seas, which could in its day out-sail anything in the Mediterranean. Narrow and built for speed, it needs some depth of water. Black circles are still painted on the hull of a chabec, to mark the embrasures where pirates laid their guns.

The *felucca* has a lateen sail and no bowsprit—she is almost a dhow; but the *saccavele* has a horizontal bowsprit on her blunt bow and carries two lug-sails and a jib. Both these are fishing vessels. Greek sponge-fishers use the *teboulba*, so called from a port on the Tunisian coast, with a sprit-sail; this is the craft of the "scaphandriers", divers who go down into the depths wearing a diving-suit and great brass helmet.

Djerba sponge fishers use the *barquette*, a felucca with a platform at the prow, where the captain stands with a water-mirror and trident, like Neptune with his wand. His mate at the tiller guides him slowly over the sponge-bed, he sights his prey, jabs downward and heaves the spoil on board. In water too deep for the trident, Djerba boys will dive for the sponge, reaching the greatest depths of the Sea of Bou Ghara. Sponges fresh from the sea are covered with a dark gelatinous material which is the living animal; it must be stripped and bleached at the factory ashore.

Every year Djerba holds a Sea Carnival, at the Spring-Time Fête on the first Sunday in April. Qarib races are held, and diving competitions with prizes for the best sponge. The whole island population goes out to the sea, like ducks in a pond, swimming, sailing, cheering in the sea-wind.



A Himalayan Holiday

by R. D. LEAKEY

I WAS sent to India in 1942 on an engineering job, and, after a couple of months' work in Bombay, found myself with some unexpected leisure because the contract I was working on was closed down. Ever since my arrival in India I had vaguely dreamed of seeing the Himalayas. So when news of the cancellation came, I was delighted to be told to do nothing on full pay until further notice.

The problem of deciding where to go on that largest of mountain ranges was fortunately decided for me by Colonel Glennie of the Survey of India. He had planned to spend his leave exploring the caves and pot-holes in the foot-hills between the upper reaches of the Tons and Jumna rivers, and he kindly invited me to join him.

The first glimpse I got of the Himalayas was from the train window while on the way from Delhi to Dehra Dun. It was during the second day of travelling over the hot and seemingly endless level plains of India that I looked up from my book and saw through the opposite window a line of blue hills topped

with low clouds stretching right across between the plains and the deep cloudless blue of the sky. After a few hours spent impatiently in gazing at them we could make out the shapes of the tree-covered hills and naked rock cliffs. Then as darkness came on, the train thundered through the jungle-covered hills to Dehra Dun, where we spent the night.

Next morning a bus that looked like a converted lorry took us first westward along a level road, then northwards across the Jumna River into the first of the foot-hills. It was an exciting journey, for the road twisted and turned upwards in numerous hairpin bends along the steep sides of a valley, often with huge drops of hundreds of feet starting sheer down from the edge of the road. The change in vegetation was noticeable; in the space of a few miles the tropical jungle at the foot of the valley gave place to steep grassy slopes, and these again to the first of the tall coniferous and oak trees that cover the hills all the way to the summer snow line.



All photographs by the author

Bandarpunch and the mountains to the west of it seen from the foot-hills about fifty miles away. Like so many Himalayan mountains the one shown on the left of the photograph is unnamed and probably unclimbed, yet it is 20,600 feet high. (Opposite) Looking westwards across the Himalayan foot-hills from about 9000 feet. Flocks of sheep and goats belonging to primitive Indian shepherds are grazed on these hills

It was not until we reached the hill station of Chakrata at the end of the motor road that we had our first view of the snow peaks. We saw them suddenly across a sea of huge smoky blue waves of hills as we climbed from the bus, and they looked like a line of thick jagged white teeth sticking into the sky. We spent the rest of the day arranging for coolies and mules to carry our loads. That evening after the sun went down, I felt chilly for the first time since I had landed in India, a delightful sensation after the sweltering heat I had endured in Bombay and on the journey up.

Our first day's march was a pleasant experience if only for the delight of walking beneath tall shady trees and across bare hillsides—always along beautifully made paths about six feet wide that followed the intricate contours of the hill slopes. We were in an area of forest reserves where the foot-hills for miles around were planted with huge lichen-hung cedar, pine and oak trees, with a few scattered Indian villages surrounded by their terraced fields in the valleys below.

The footpaths were the only means of communication between the villages and forest rest-houses scattered throughout the hills, and in spite of landslides and floods they were always carefully maintained by the Forest Department.

Budher Forest Rest House was the first of the bungalows we visited because it was a convenient centre for exploring local pot-holes. These were mostly near the tops of hills in limestone that was often over a thousand feet thick, though the pot-holes themselves were never over 200 feet in depth. One of them, named 'Toad Hole' after a stalagmited toad skeleton found at the bottom, had two underground chambers full of particularly fine stalagmites and stalactites.

In locating these pot-holes we came in contact with the shepherds of these hills, primitive, independent individuals, a tribe apart who do not even speak the same language as the inhabitants of Chakrata—only one day's march away—where our coolies came from. These shepherd people grow their own food,





Cavern formations in 'Toad Hole', one of the pot-holes explored by the author and his friends on Moila Hill above Budher. The Indian coolies from Chakrata did not object to assisting in these underground explorations and made excellent helpers. (Opposite) A village temple in the hills above Lākhā Mandal. Below this point the Jumna River passes through the steep valley between the two hills in the background

weave cloth from their sheep wool, and are hardly yet affected by the encroachment of 'civilization' and the use of money.

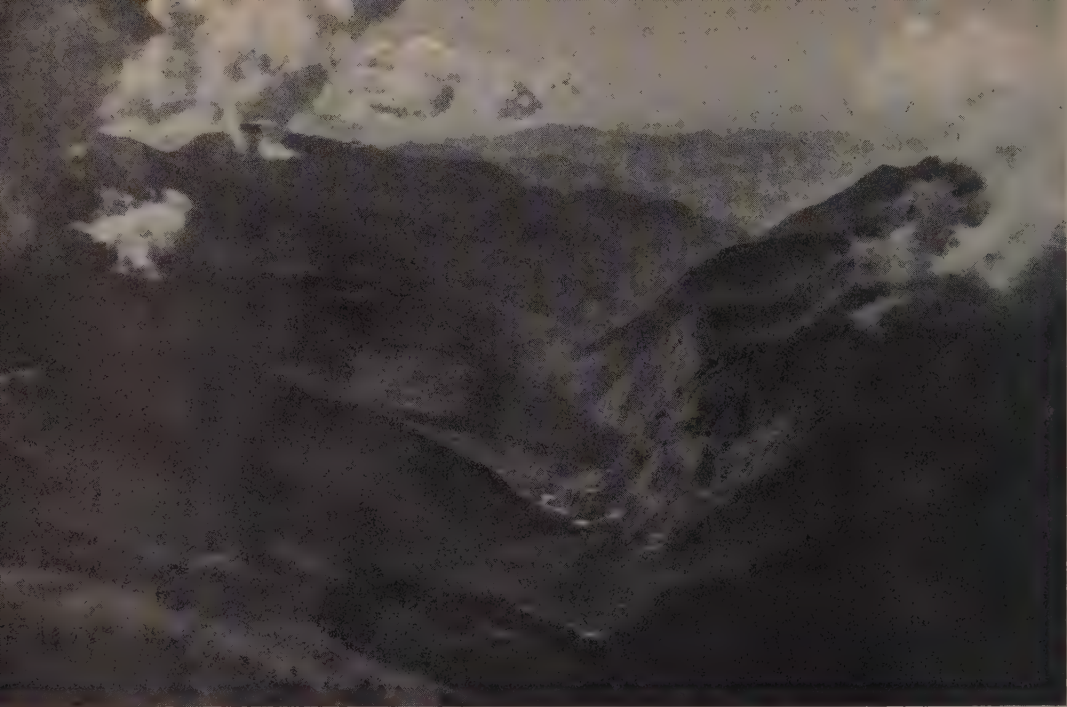
From Budher we trekked down into the valley of the Tons River which we followed for a few days, before crossing back over the hills to the Jumna River at a village called Lākhā Mandal. From here, on we camped in tents, and our route was along the pilgrim paths up the Jumna to the snow mountains among whose glaciers that sacred tributary of the Ganges starts on its way. The scenery of these two rivers is very much the same as one approaches their sources, and both are used commercially for floating logs down from the forests that cover the hills. These hills rise to about seven or eight thousand feet above river level; and where they are not forest-covered, are grown over with scrub and spear grass which, lower down, is sometimes as tall and thick as a field of ripe grain.

The inhabitants of the valleys have their terraced gardens and villages perched high and low wherever the hillsides are not too

steep to work on. Pumpkins, millets, rice, beans and other grain are their chief crops, although lately the growing of potatoes for the Europeans in the hill stations and elsewhere has become an important trade. Mules and even pack-sheep are used to carry the potatoes to Chakrata, and it was a pathetic sight to see sheep and goats staggering along with their two packs made of skins hanging each side of their backs. Some of their loads weighed as much as thirty pounds.

But the sheep and mules were not the only creatures carrying loads along these paths. We occasionally came across coolies loaded just as heavily; one old man had a large full sack of meal that must have weighed twice or three times as much as he did on his back; and there were two villagers each carrying a large sheep. But most peculiar was a coolie with a sort of wicker chair on his back in which sat another Indian facing backwards.

It was October and November when we were in these hills, and the population were busy with harvesting, while nearly every con-



A view of the Jumna River valley from about 14,000 feet on the mountains above Jamnotri, where this sacred river rises. The village of Kharsarli is in the valley, on the flat table-land shown at the bottom of the picture

venient tree near the villages was hung with piles of hay and straw tied to the branches for storage ready for the coming winter. The weather was continuously glorious, with deep-blue cloudless skies, especially during October. But as we drew nearer the mountains, we noticed that after about midday, clouds began to form over them. From the observations made during this brief trip, it appeared that these clouds kept forming earlier each day until, after a week or a fortnight, there would be a mild storm and perhaps a thin covering of snow higher up. The sky would then be clear of clouds for a day or two.

The agricultural methods we saw practised in the Jumna valley were primitive but appeared effective in the circumstances. We saw one or two oxen drawing a wooden plough made from the branch of a tree, whose single iron-tipped prong scratched into the ground. This form of plough, I believe, is to be seen all over India. Harrowing consisted of a short heavy plank or log being drawn by oxen sideways over the clods, the weight being supplied by the Indian endeavouring to stand on it as he beat and yelled his animals into motion. Threshing was done on circular

stone floors, where the grain was heaped as it was brought in. Cattle were then induced to walk over it to break it up; it was usually the job of some small child to keep the beasts moving in the confined circle by twisting their tails and whacking them with a stick. The grain was ground into flour or *ata* between circular millstones driven by water. From the outside these mills looked like small crofters' cottages with a channel cut from a tree-trunk bringing the water steeply in from one side, while a ditch took it away on the other side.

In appearance, the better village houses were not unlike Swiss chalets, built of thick well-carpentered planks of wood. The rooms were small, and, inside, one had the impression of being in a large box with no ventilation except the door. The roofs were crude slate tiles or thatch, and the woodwork round the door was often decorated with carvings.

A few miles from the source of the Jumna River, we came to the village of Kharsarli, situated on one of the few patches of level ground to be found in these hills in the fork of the river. It was here that we got the best chance of getting to know the inhabitants



Kharsarli village and temple, with the mountains above Jamnotri, which stands in a deep gorge behind the tree-covered hill in the middle distance

of the region, for the village became the focal point from which we attempted to climb the local snow peaks. We found the people dignified and likeable, wearing a pleasant style of home-made clothing. Their health, however, was not good, and there were numerous cases of goitre. The first person who made himself known to us was a depressed and very miserable-looking person suffering from acute toothache. It was unfortunate that we could do nothing to help him.

That these people are religious was evident from the number of small temples and shrines we came across in the foot-hills. An interesting feature of these buildings was the coins nailed into the woodwork of the entrances, by way of offerings; we even found a sacred tree with coins nailed into it. Most of the coins were Indian, and of low denomination, but those in the woodwork of the Kharsarli temple included East India Company coins as well as Queen Victoria's reign.

It is not surprising that the Hindus regard the Jumna River as sacred. Not only are its higher reaches in awe-inspiring scenery, but within a mile or so from its first appearance as

a small cascading stream from a glacier, there issues from the earth on its banks a large spring of steaming hot water. It is this place, Jamnotri, at the bottom of a deep tree-covered gorge, that pilgrims from all over India visit. On the whole, Jamnotri is disappointing, for it consists of nothing more than a group of small, not very impressive temple buildings over the hot spring outlets, with some ugly pilgrims' quarters near by. There was a naked 'fakir' with long hair and ashes on his body in attendance when I visited the place, and it appears that one of the religious rites practised is to bathe in the spring water. This can only be done after the water has cooled slightly in a special tank, for its temperature as it flows out of the ochre-coloured apertures in the rock must be close on boiling point, in violent contrast with the ice-cold glacier stream that curves round close below the temple.

As a climbing centre the place has a lot to commend it, though we did not realize its possibilities until most of our precious days of leave were spent, in reconnoitring, and my companion had already started back. To begin with, the district is centrally placed in

the Himalayas, and only five days' trek to the snows from the motor roads of Chakrata. Above Jamnotri itself is a line of un-named peaks of about 19,000 feet in height, which might be climbed in one day by a party based in a camp near the snow line. This could be established with the help of Chakrata coolies billeted in the pilgrims' quarters at Jamnotri, and they would not need boots or special equipment. Jamnotri itself is not to be recommended for people who dislike being closed in by high mountains, for it is situated in a narrow gorge that rises steeply for thousands of feet above the river, and only grudgingly allowed me a small flat space opposite the temple on which to pitch my tiny tent. But there is plenty of firewood about, and because of the spring, plenty of hot and cold water.

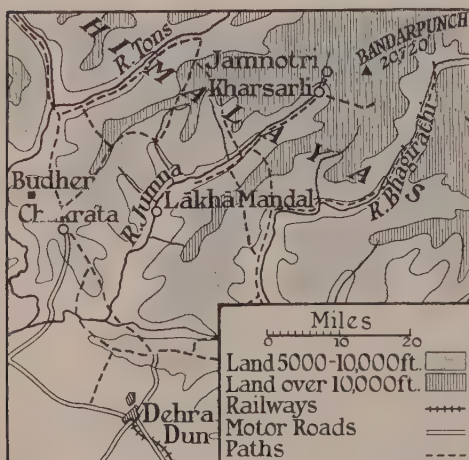
Further east along the range of mountains from Jamnotri is the huge bulk of Bandarpunch mountain (20,720 ft.) which I believe has never been climbed. From the south, the mountain presents a long unbroken ridge rising to a peak at either end, the highest in the East. After a lot of reconnoitring to find a camp site close to the snow line which could be reached by the loaded, barefooted and not very good mountaineering coolies, I eventually found a path leading from the south of Kharsarli that curved upwards over a range of hills to the north-east, bringing us to a convenient south-facing valley where the snow line must have been as high as 17,000 feet. It was to this valley that the coolies carried equipment and firewood from the rhododendron bushes that grew at the 13,000 feet tree level, and after pitching my tent, went back the same day to Kharsarli at about



All travel beyond the hill stations is on footpaths such as the one shown here, through the thick firs and pine trees of the Forest Reserves

8000 feet, where they were billeted. That they had to be taught to move slowly and continuously, and had great difficulty in climbing the last stretch, is hardly surprising considering that they were then at a height equal to or greater than Mont Blanc, the highest mountain in Europe.

From this camp I attempted, rather optimistically, to climb Bandarpunch. Starting at 3 A.M., I took three hours to reach the edge of a snow- and glacier-filled plateau that slopes down towards the bottom of the Bandarpunch ridge. This I skirted by keeping to its western edge, and, after crossing the glacier that lay below the steep wall of the mountain, managed by about mid-afternoon to be only slightly over halfway up to the ridge, before I gave up. I had found the snow soft and deep and difficult to negotiate except where it directly faced the south, when it was sometimes hard enough to walk on. This made me decide to skirt the plateau on the eastern side going back, for it appeared to have a ridge of rock and hard south-facing snow. By the time I had followed down the wall glacier and was ready to strike across in the direction of the valley where my tent was, it was already



Stanford, London



Bandarpunch Mountain showing the snow-covered ridge connecting the two main peaks. A wide glacier and snow-field slopes down to the foot of this ridge from the rocky hill on the right of the picture. The author pitched his camp below the scree at the foot of this hill

dark, and then my troubles began.

First my expensive Indian boots which had been made in Bombay for the occasion began to fall to bits and had to be tied together with string. Then I found myself floundering in knee-deep snow badly streaked with crevasses (mostly covered over) that had to be continually plumbed for with the ice-axe, and occasionally crossed by lying prone and wriggling over frail snow bridges. The route I was forced to take to avoid open crevasses diverted me into ever deeper snow, and I soon lost all hope of finding hard snow I could stand on. It took some six or seven hours by torchlight to reach the edge of the plateau I was making for, across what could hardly have been a mile, and owing to my leaking boots my legs were frost-bitten to the knees. I managed, however, to reach a steep hard snow slope down which I glissaded for about a thousand feet, and finished up at the bottom in a matter of minutes with my legs thawed out by the effort. Then followed a hunt in the starlight for my tent (my torch having

long since given out), and it was exactly twenty-four hours after I had set out that I was again in my sleeping-bag,—this time with my once frozen feet feeling as if they were being boiled in water, they were so painful.

This was the end of my climbing efforts, and it taught me that Bandarpunch could not be climbed by a novice like myself without one or perhaps two camps higher up the mountain. Next day when my coolies arrived, I managed to get my boots on and hobble down to Kharsarli, but after that I had to ride back to Chakrata on a mule because the frostbite had blistered my legs, and, like other cuts and scratches I got at those altitudes, they refused to heal and soon turned septic, so that I was lame. The mule I rode had no proper saddle, and when I arrived in Chakrata I was in great doubt as to which was least painful,—to stand on my feet or to sit down!

But I had had a glorious holiday and I now long for the time when I can climb even higher into those stupendous mountains.

Frost in Spring

by RAYMOND BUSH

The author of this article, after watching and suffering from spring frosts for many years, offers a simple explanation of the causes and remedies to amateurs who have not time or equipment for full-scale micro-meteorology but are ready to use their eyes and apply that same law of gravity which raised a bump on the head of Sir Isaac Newton nearly three hundred years ago

IN an article on apple-growing in THE GEOGRAPHICAL MAGAZINE for June 1942 I pointed out that spring frosts were responsible for the immense annual variations in the weight of the English fruit crop. This seems to have surprised some readers who have neither gardens nor connections with fruit-growing and do not associate April and May with sleepless nights, frost-alarm bells and lack of fuel-oil supplies.

Comparison of the crops of frosty and frost-free farms shows what may happen on a chilly night in spring, and by comparing the annual crop of the United Kingdom with that of Canada, the U.S.A. and Australia their steadiness and our instability of output is obvious.

PRODUCTION (in Thousands of Tons)

Country	1932	1933	1934	1935	1936	Max. Variation
England and Wales	160	214	527	133	511	298%
Australia	181	212	206	188	..*	17%
Canada	241	330	262	271	247	37.5%
U.S.A.	3017	3064	2586	3584	2518	30%

* The Australian figure for 1936 was not issued in the last Government publication dealing with Fruit Supplies in 1937.

How is it that we continue to accept these bad crops with so little demur? There are many reasons, but the most obvious is that we need never be without imported fruit unless we happen to be at war. Land is dear and once his orchard is planted it may seem to the grower too late to remedy a mistake or to replant his trees on a better site. Incidentally a most profitable apple orchard in Kent, twenty-seven acres in extent, was moved with less than two per cent loss, fourteen years ago, when the trees were twenty years old, so that fruit once planted need not necessarily be regarded as permanent.

Choosing a frost free site is not a matter of luck. It is comparatively easy to assess the liability to frost-damage of any site if certain vital factors are appreciated, but first

of all one must understand how and why spring frosts occur.

For a damaging spring frost to develop the night must be clear and windless. These conditions usually accompany a high barometer reading with low air humidity from mid-April to mid-May. This period covers the blossoming of our most important varieties of fruit.

On these clear, windless nights loss of warmth by radiation from every surface or object exposed to the sky increases in intensity from sunset until nearly sunrise. The lowest temperatures usually occur just before dawn. Radiation loss is the attempt on the part of the dark section of the globe to equalize its temperature with that of outer space where absolute zero prevails. This is put at 491.4° F. below freezing—decidedly chilly.

To visualize this phenomenon you may compare the earth to a suspended marble slowly revolving midway between a fire and an open refrigerator. For as long as the marble faces the fire (the sun) it will absorb radiated heat, but when it faces the open door of the refrigerator (space) it will lose heat rapidly. Wrap your marble up in a blanket (clouds) and you will reduce both heat absorption and heat loss.

Many factors are involved which must always limit our acceptance of loss of heat, and although in the terrible frost of May 16-17, 1935, in low-lying sites such as the Rother valley, behind the Sussex Downs, more than twenty degrees below freezing were registered, such cold is rarely met with in our island during spring; which is just as well, for even six degrees of frost maintained over a period of an hour will do a great deal of damage to the fruit crop.

On these frosty nights in spring, although there is no wind, there are considerable air movements which are often wrongly described as breezes or winds. On the slopes of large hills as the sun sets in summer a steady breeze will blow downhill until such time as valley and hill temperatures approxi-



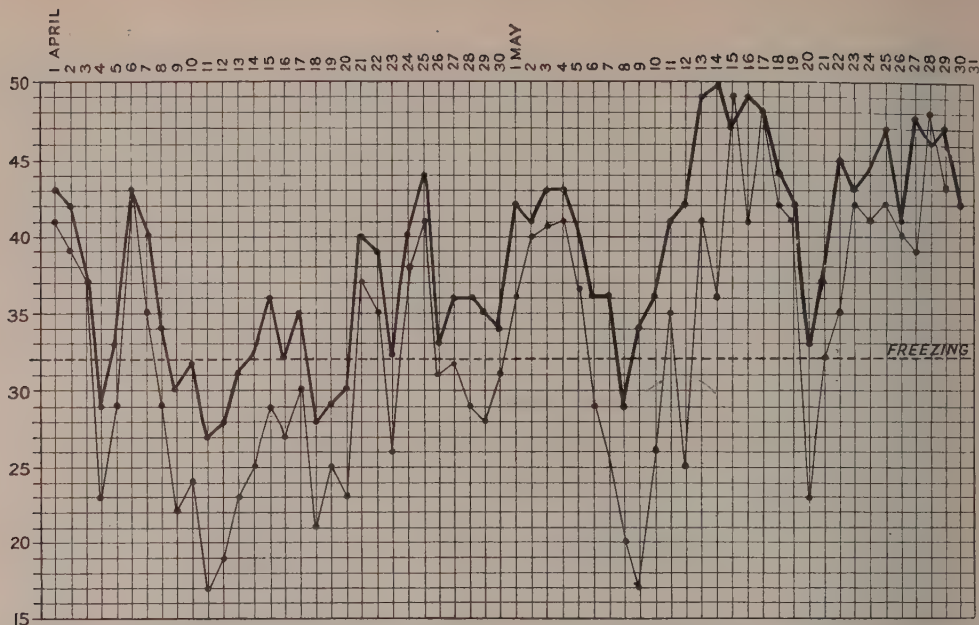
Photographs by the author

Rime, heavy hoar frost, deposited from moisture-laden air on all surfaces exposed to radiation loss

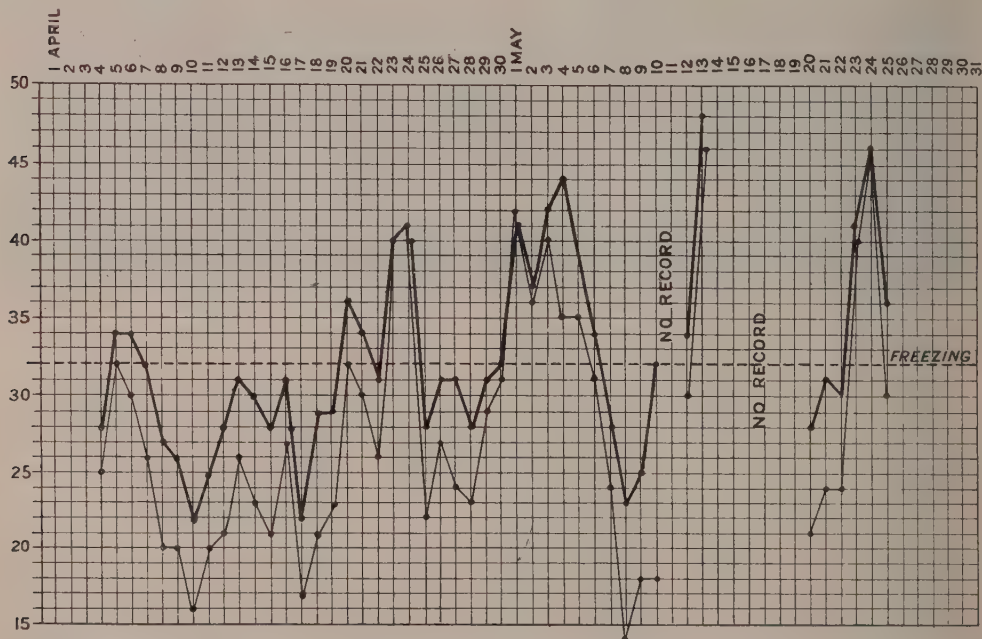
mate. Once that condition is arrived at, if the night be clear, the valley temperature will fall steadily but rapidly while the hillside temperature will vary very little.

With radiation loss in operation the surfaces of all objects facing the sky become cooled. Air in immediate contact with those surfaces becomes chilled to a much lower temperature than air even a foot above, and since cooling increases the density of the air it is given weight—a cubic foot of air at 32° F. weighs 0.081 lb., a cubic foot of air at 26° F. weighs 0.082 lb.—so that the chilled air begins to fall to the lowest level it can

find to collect and pool until enough depth has accumulated to cause damage to susceptible crops. This cold air does not mix readily with the air a few feet above soil level but remains to all intents and purposes a separate entity. Eventually, where there is any fall to lower levels, enough chilled air collects for gravity to take a hand and a steady, though usually very shallow layer of this very cold air begins to slide off the slopes and to find its way to the valley bottoms and depressions. You may have noticed when motoring after sunset the sudden chill at the foot of a hill before the climb up the other side.



The heavy graph line indicates minimum night temperatures in degrees Fahrenheit on an orchard at 520 feet elevation during April and May 1938. The light line indicates corresponding temperatures at valley bottom (300 feet) level of the same Hampshire hillside. (Recorded on the Blackmoor Estate, Liss, Hants.)



The light graph line indicates minimum night temperatures in a shallow valley about 250 feet above sea level at 3 feet above soil. The heavy line indicates corresponding temperatures also at 3 feet above soil, but only 31 feet higher up the hillside, clearly indicating the passage of a steady flow of extremely cold drainage air. (Recorded on the Leckford Estate, Stockbridge, Hants.)

Once a substantial amount of chilled air has collected, radiation loss from objects immersed in it is speeded up, since there is no warm, surrounding air to reduce loss, and the continual steady feed of cold air deepens until whole valleys and plains lie submerged beneath a rising tide of air chilled to a damaging temperature.

While the low levels suffer from temperatures much lower than those recorded on the hillsides and high ground, these latter are responsible for much of the cold air moving down into the valleys, but it is significant that the chilled air which is leaving the high ground begins its movement at a temperature which is normally well above freezing point. It is because of this that a tender crop of early potatoes on a well-placed site will not show frost damage while all the low level crops are ruined.

The two graphs demonstrate minimum air temperatures, recorded at different levels, on two slopes and two valley bottoms. In the case of number one, the bottom of the slope is over 200 feet below the top and a couple of miles away. In the case of number two, the difference in height is merely 35 feet and the distance between the thermometers a matter of 150 yards. It will be noted, however, that by choosing contours which are similar the thermometer variation can be matched on large or miniature sites.

The closed valley is a simple type of 'frost-hole' but between the high land and the obvious hollow all sorts of land contours may be involved, directing the accumulating feeds of chilled air here and there towards their ultimate collection point. The depth of collected chilled air will, of course, be decided by the severity of the frost (*i.e.* the degree and duration of radiation loss) and by the extent of the area of higher land which is passing its cooled air onto the collecting area below.

Although in a very severe spring frost the maximum build-up of chilled air on a level plain is unlikely to deepen beyond ten feet, if drainage air from a large surrounding area of higher land comes down to reinforce it that depth may be greatly exceeded. So, while the Cambridgeshire flats may show a ten-foot tide-mark of frost damage, the West Sussex areas below the South Downs may suffer at more than a hundred feet above valley bottom. Such depths are not found in the wide-open plain between Gloucester and Evesham, where a 30 to 40 foot frost is a rarity, but at that can do enormous damage to valley fruit.

Anyone who wishes (provided of course

that he has petrol for his car) can, during country drives, note the places which are likely frost-holes and can confirm or correct his choice by a visit after a severe spring frost. In Kent, for instance, there is an immense cup embracing the Marden area surrounded on all sides by higher land with a very restricted river valley outlet towards Maidstone. On spring frost nights this inland sea is fed by chilled air from the North Downs as well as by the flow from its own steep sides to the east, west and south. In a bad year thousands of acres of orchard land here suffer cruelly, though, owing to the size of the area, a rise of twenty or thirty feet above the valley bottom level will give comparative freedom in any save the severe frosts. The frosty areas of West Sussex and Ross-on-Wye are outstanding examples of large-scale frost-holes giving readings comparable with graph number one. Actually Ross-on-Wye has recorded some of the lowest spring and winter temperatures in England.

A very fine example of a frost-hole is to be seen on the road between Petersfield and Winchester as one approaches the village of Bramdean. Here, drained air from low hills concentrates along the road level and the damage following frosty spring nights is easily observed. In 1938 on Derby Day, when the two photographs reproduced on page 44 were taken, the oaks in the lower levels of this valley were black and leafless while but a few miles nearer to Petersfield, where the road rises, the oaks were in rich, green leaf.

A similar though smaller example is always on view after a May frost on the Billingshurst and Wisborough Green road about a mile from the first-named and just before reaching the River Arun. Here a slight rise gives frost freedom though the oaks in the dip below are frequently left leafless, the frost of May 16, 1941, being enough to provide this leafless condition.

The Cotswolds are a happy hunting-ground for the frost-hole spotter. On a morning of hoar frost in late autumn or spring one may drive from Tewkesbury towards Stanway Hill in freezing fog, which is soon exchanged for warm sun as one climbs the hill. On the high land, between the top of Stanway Hill and on towards Stow-on-the-Wold, one is continually running into dips and hollows where the hawthorns are white with rime while those a few feet up a rise are completely clear of frost. I have noticed on several occasions a spot where a cold current of air is directed by a fold of the ground onto a beech tree bordering this same road just before reaching the pool at Upper Swell.



These photographs were both taken on June 3, 1938, between Bramdean and Petersfield in Hampshire and show (left) complete loss of leaf in the valley and (right) freedom from all damage on the higher land

The lower section of this particular tree is always damaged after a frosty spring night. Beech is a most useful indicator of May frost, for the damaged section very soon crisps up to brown, making a great contrast with the undamaged green above, thus outlining the exact movements of invisible cold air currents.

In major frosts, such as those of May and April 1935 and 1938, damage to beech and other trees is very clearly marked on the five-mile section between Cockleford and North Cerney on the Cheltenham–Cirencester road, a valley road which lies between very much higher land, despite the fact that on this upland area of the Cotswolds the road itself is between 450 and 600 feet above sea-level.

Leaving the Cotswolds and moving across to the Berkshire downs, there is an ideal frost observation site on the old Roman Road between Cricklade and Newbury, about two miles before reaching Baydon where Hinton Downs face Sugar Hill. This is to all intents and purposes a closed valley bordered by land rising to 700 feet. Across the south-west end of the valley a line of beech trees is planted. This in any frosty spring is browned to a dead level corresponding with the height of the land behind. Even a moderate frost will achieve this effect, and a severe frost increase it but little, for that level once reached

the cold air will drain over to a lower level of the valley beyond.

Anyone who has a collection of country maps with the contours marked in different colours can with some degree of certainty mark out those areas which are certain to be badly afflicted with frost. One does not, therefore, need to look for browned beech leaves, blackened oak buds, the rotting and wilted shoot and leaf of ash and walnut, before deciding whether a site for a house, a garden or a fruit farm will be safe from frost. Any surveyor who has grasped the theory of cold-air drainage can assess the freedom from, or liability to, frost of any given site. It is, however, essential that his estimate should embrace the district and not limit itself to an odd acre or two; for gravitating chilled air on a frosty night may move in bulk at two or three miles an hour, and feeds from valleys connecting but out of sight may reinforce the collection of cold air from the immediate neighbourhood in exactly the same way that the rain from watersheds many miles distant may cause floods near home.

If we cannot move our trees from frosty bottom land to safer heights the obvious remedy is either to prevent the large-scale pooling of cold air or to tackle it when it has arrived. Let us take the last situation first.

Until black-out restrictions forbade the use



(Left) Chestnut foliage on the left of this photograph is resistant to frost; oaks in the background suffered severely; the walnut on the right is completely defoliated. Photographed at Lingfield, Surrey, in 1941. (Right) Beech belt off the Cricklade-Newbury road in Berkshire. Leaf is killed by spring frosts to the level of the land on the horizon (indicated by the black line)

of open-flame orchard-heater pots the practice was to heat orchard sites which were liable to frost damage by setting orchard-heaters among the fruit trees at a concentration of fifty or more to an acre. As each heater burned up to four gallons of fuel oil in a night, the amount of heat generated was considerable. Some idea of the extent of American orchard heating may be gathered when it is recalled that in one night early in January 1937, 5,000,000 heaters burning an average of one gallon of oil per hour, operated by 16,000 growers on 60,000 acres of fruit, burned 32,000,000 gallons of oil to try and save the Californian citrus crop.

In suitable conditions, which implied more or less stagnant cold air over a considerable acreage, these heater-pots worked quite well. The number of pots required and the amount of oil burned varied according to the length and severity of the frost and the depth of pooled, cold air which collected over the orchard. The principle involved was that of 'heat inversion'. Each heater when burning provided a fountain of hot air which, at first rising rapidly, cooled as it rose until it arrived at a 'ceiling' or that height where the naturally warmer upper air equalled it in temperature. At that point the continually rising supply of heated air began, on cooling, to circulate back to soil level where it was once

more warmed and sent aloft. This meant that the whole of the air in the orchard to a height of from twenty-five to perhaps fifty feet was raised and maintained several degrees in temperature and a damaging frost either prevented or much reduced in severity. Exactly the same thing happens in the London area during a spring frost night; the multitude of chimneys take the place of the orchard-heaters, 'inversion' is induced and the observant City man may notice as his train enters the outskirts that the Londoner's magnolia is in full and undamaged bloom while his in the country is brown and withered.

The orchard-heater system is excellent on the stagnant site but fails to function fully where a steady drift of cold air is coming in from outside the orchard, or if the heating be applied on a slope where there will be enough air drift to prevent static inversion and divert the warmed air away from the site to be protected.

Anti-freeze sprays have been suggested as another possible antidote, since the liability of sap to freeze is regulated to a great extent by its sugar content. Glycerine absorbed into the flower tissues will take the place of sugar and enable them to resist for a time considerably lower temperatures than the unprotected blossom will stand. While interesting in the amateur's garden, such applications



(Above) *A cluster of Bramley's Seedling which, opening after the frost of 1938, shows fatal damage. Pollen, anthers, stamen and styles are blackened and sterile. Spring frost will damage bud, blossom or fruitlet. (Left) A Bramley orchard in full flower. If but one bloom in twenty sets to a fruit a bumper crop may be expected*

are ruled out for large-scale orcharding since frosts need not give long warning of their approach, glycerine is a vital ammunition of war, and to spray large acreages takes several days. Despite the fact that it is not economically practicable to spray fruit trees in blossom with glycerine solution to give them a short anti-freeze capacity, two Americans thought well enough of the idea to patent a formula.

As I have said, cloud formation on a radiation frost night will blanket off frost. A sky covered with cloud is not essential: few stray, reasonably substantial clouds result in an immediate rise of temperature, since they act as reflectors from which the heat rays emitted from the earth's surface are reflected back again.

These heat rays which leave the earth are travelling outwards into space at all angles, and therefore when reflected leave the under surface of the cloud at similar angles—the angle of reflection being equal to the angle of incidence. If, therefore, a cloud lay between, say, Canterbury and Maidstone at two thousand feet it would be receiving fractions of radiation heat from practically the whole of Kent and would be returning

a part of that heat to the whole of Kent though more would be received directly below it.

Since it is possible on an area of a few hundred acres to match the conditions prevailing on a vastly greater acreage, provided that the land contours are suitable, it should not be impossible to blanket out frosty areas of reasonable size by means of an artificial smoke cloud maintained by a slow-flying aeroplane circling the area which it is desired to protect against radiation loss. A frost-free oasis would thus be created in a chilly countryside. The cloud formation resulting from one of those familiar vapour trails left by high-flying planes, though interesting, only shows cloud in conditions which encouraged that formation. For definite control in radiation frost conditions a positive smoke screen would be needed and the chemical smoke barrage would almost certainly not give the same results as a vapour cloud. The suggestion should, however, be tried out, since the cost would be slight compared with the benefits ensured by success.

Except where large frost-holes are concerned every site must be considered on its own merits. Some orchards merely need



Above) Close-up, showing curious ice formation on leaf edges. (Right) After a November frost, when spicules of ice built up around the edge of every leaf. Jack Frost was very busy that night!



opening up strategically in order to allow cold-air feeds to pass through to lower levels. The presence of a high shelter belt, or thick hedge, set across the slope may cause cold air to back up and saturate the orchard behind it or part of it. There are cases where the cutting-off of the lower limbs of shelter belt trees up to six or eight feet above the ground will allow passage to downward-moving cold air but still provide ample shelter against wind coming from the quarter against which wind protection is needed. Such remedies can be applied as observation suggests.

Cold air may be described as 'killed' when it has been raised to a temperature which will not damage fruit or blossom. The Americans, for many years past, have experimented unsuccessfully (judging by the last letter I received from a Californian citrus grower) with schemes designed to blow artificially warmed air, or the air from above the 'ceiling' of cold air, down among their trees, thus churning up the cold air and raising its temperature. In some cases the air at twenty feet or so above the soil level was considered warm enough; in others, hot air from a furnace has been fed through a large chimney to the fan up above to spread over the

orchard. Old aeroplane motors and propellers arranged so that each unit turned slowly on a fixed axis have been used in many cases but do not seem to have proved very effective; for, though it is easy to push cold air down into warmer air where it will at once take the lowest place, it is a very different matter to persuade warm air to mix with cold.

Just before the war an Essex grower and myself experimented tentatively on a rather uncommon site. From some thousand acres of high land the contours insisted that all cold air draining from them flowed down into a steep valley whose sides and bottom were planted with well-grown fruit trees. The ultimate fall to lower levels was blocked by a neighbour's trees which he was unwilling at the time to fell. As a result about fifty to sixty acres of orchard trees had to be orchard-heated, which necessitated the burning of up to ten thousand gallons of fuel oil a night. The expense involved can be realized.

Since, at one point of the valley just above his fruit, the slope eased to a large level area which had once been a pool, we decided to fit a screen, made of hessian supported on wire, across the valley at this point and see how



Biggleswade Chronicle

(Above) *Large-scale orchard heating in operation on a Bedfordshire cordon orchard. Fuel oil is burning in open orchard-heater pots. Some idea of oil consumption can be gathered from the illumination by night—and by the soot on any nearby washing left out on the line till next morning.*
 (Below) *A hessian screen set across an Essex valley to see how far chilled drainage air could be held up. Later it was found that a barrage of orchard-heaters set 200 yards above the screen (on the left) 'killed' most of the cold air coming down the valley and onto the orchards below*



far it was possible to hold up the flow and record our success with thermometers.

It was soon obvious enough that the screen held up and collected much cold air, but we had reckoned without the feeds of cold air from the valley sides which converged at the screen at right angles to the main flow from the valley itself. A smoke test showed that the main flow of cold air moving directly towards the screen was lifted and discharged over the top, which is exactly what one would expect and which no doubt could have been got over by using subsidiary screens to divert the side flows.

The intention was eventually to erect a permanent screen across this valley with several large-capacity suction fans drawing the ultra cold air from the upper side of the screen, passing it through a heater element and discharging the 'killed' air on the fruit side of the screen, thus cutting off the whole valley feed of cold air. Before going any further in the matter, however, a barrage of orchard-heater pots was set across the valley some two hundred yards above the screen, and this was found effectually to 'kill' that particular feed and to free the orchard of most of its frosty air. The advent of the black-out and the cost of the trials put further experiment out of the question.

Where electric power is cheap the use of radiant heat from heater elements with reflectors slung above the trees is a possibility; but in England power is at present an expensive monopoly. Again, but for the war, an interesting scheme would have been in operation in a very closely planted and productive cordon and dwarf pyramid orchard in West Sussex. The site sloped down into a valley with a restricted outlet. Since the rise of cold air in the valley and up to the level of the orchard was slow and gradual and the pooling level of cold air at the lowest end of the orchard was unlikely to exceed ten or twelve feet, as shown by the tide-mark of blackened foliage of oaks in the valley itself, a different line of approach was tried.

The system consisted in screening off the bottom of the orchard against invasion by the valley cold air, using a twelve-foot-high barrier of hop-screening. Since this hop-screening will tame a gale to a gentle zephyr, it was reasonable to suppose that it would act as a steadying agent against slow-moving cold air. Behind the screen lay a series of open-bottomed inverted sheet steel tunnels, each fifty feet long and with a rise of just under two feet in the total length from the lowest end. At each lowest end an atomized oil-burner, pressure-fed with oil from a small

compressor plant via a single long main, discharged an extremely hot flame along the tunnel line.

These tunnels in operation each provided a radiator fifty feet long, from the upper surface of which heated air rose in the still of the frosty night. Since the heated air evacuated at the far end of the tunnel was never less than 150° F., it seemed reasonable to suppose that this barrage would be sufficient to deal with the slow infiltration of cold air through the hop-screening and maintain a wall of warm air against external cold-air invasion. It is interesting to note that in exactly the same way that cold air can be run like water down any slightly inclined gutter, so hot air will pass along the top of an inverted U tunnel provided a slight rise is allowed.

Such trials and experiments are too costly for the unendowed amateur and should be tried out by the industry under intelligent and imaginative supervision until the subject has been well and truly explored for the benefit of existing orchards. In the meantime regulations might well be framed to prevent the further planting of frosty sites in this country. Until this is done, posterity will continue to be at the mercy of fruit importers because of the impossibility of stabilizing national production.

Preventing a cold-air invasion from below by erecting a barrier of hop-screening backed by radiators. One of these, 50 feet in length, is shown. A vaporizing oil-burner directs its flame into the open end, the heated air travelling along the tunnel



New England Lighthouses

by EDWARD ROWE SNOW

The following article, written in response to Mr Bowen's recent contribution, 'Lighthouse Life', comes to us from a First Lieutenant in the U.S. Air Corps who has had to spend some time in hospital in England. The Christmas air service he describes is organized by the U.S. Coastguards who are responsible for the maintenance and personnel of American Lighthouses

I WAS privileged to see many of Great Britain's lighthouses, either on the way over here from America, or when my group returned from Africa. So it was with pleasure that I read, as did many others in the same hospital ward, Mr Bowen's article on English lighthouses in the February GEOGRAPHICAL MAGAZINE.

From old England to New England is a long way, but in this article I will take you, in imagination, to the shores where the Puritans and Pilgrims landed three centuries ago and show you the most interesting of the 194 important beacons of New England's rock-bound coast, most of which I have visited.

Taking off in a seaplane from the Commonwealth Airport at Boston, we are soon out over Boston Harbor, the most romantic and historic waterway in America. There, down below us, twelve miles from the scene of the Battle of Bunker Hill, lies Boston Light, built in 1716 by English architects for the American

colony. As our plane circles the 102-foot tower, we may recall that the first keeper, George Worthylake, combined his job as light-keeper with that of sheep-herder on a nearby island, and did much harbour piloting as well. This young American was drowned near the lighthouse in a great gale in 1718. In 1719 a fog-signal gun was taken out to the island, where it warned ships to keep away from the dangerous ledges until 1831, when it was replaced by a reed trumpet. The old gun still stands beside the tower. Nelson sailed by Boston Light in 1782 aboard the *Albemarle*.

One of the most glorious American sea engagements, from the British point of view, was the victory of the British ship *Shannon* over the American man-of-war *Chesapeake*, fought off Boston Light on June 1, 1813. Captain Lawrence of the *Chesapeake*, mortally wounded in the first nine minutes of the fight, called out his now famous "Don't give up the ship", and then expired. The British guns were sweeping the American ship to such effect that the battle ended six minutes later, and Keeper Bruce of Boston Light sadly watched the *Shannon*, under victorious Captain Broke, tow the vanquished *Chesapeake* away from Boston Harbor.

Before it was extinguished, because of the present war, Boston Light flashed twice a minute, with a candle-power of 100,000.

Guarding the northernmost reaches of Boston Harbor lies Graves Lighthouse, named after Vice-Admiral Thomas Graves of John Winthrop's 1630 fleet, known as America's first foreign trader. Graves Light makes a double flash every six seconds, with a 380,000 candle-power. The lighthouse was begun in 1903, and first flashed out its warning rays at sunset on September 1, 1905. Its light can be seen nineteen miles away on a clear night.

Every year we drop Christmas packages from an aeroplane to the keepers of the New England lighthouses up and down the coast, and it usually takes two days of flying to com-



plete the assignment. When we flew over Graves Light on Christmas Day 1938, Keeper Reamy came out and waved to us from his 'balcony'. We circled and dropped our gift, but it hit the side of the tower, bounced on the ledge, and slid into the choppy waves of the outer harbour. So we decided to drop one of our extra packages. In the meantime, the keeper, seeing the floating bundle, launched his dory, and rowed for half a mile before catching up with the elusive bundle, which consisted of candy, cigarettes, cigars, chewing gum, razor blades, a pen and pencil set, copies of the latest magazines and, what he really wanted, the daily papers. The following spring, when we visited him by boat, we climbed over to the riprap, where we discovered the second package quite the worse for wear!

Many fine vessels have gone to their doom near the Graves.

Continuing our air journey up the coast, we pass over the ruined lighthouse on Egg Rock, Nahant Bay. The rock itself is said to have been cursed in 1819 by a young girl whose lover was drowned in bringing her a



Boston Light, built in 1716 by English architects

bunch of forget-me-nots from the ledge of the rock while she stood on the cliffs opposite. The lighthouse built around 1840 at the scene of the tragedy was abandoned at the turn of the century, and the lighthouse-keeper's home collapsed and fell into the water, so there are those who believe that the curse still holds. Only a few ruined remains are visible as we pass over the ledge and head up the New England coast toward Gloucester, Massachusetts. This city, a fishing centre, has its inner harbour guarded by Ten Pound Island Light.

Climbing away from Ten Pound Island, we circle over the reef of Norman's Woe, of which Longfellow wrote in 'The Wreck of the Hesperus'. Soon, as we continue north, the great towers of Thacher's Island appear, 165 and 169 feet high. This island is named after Anthony Thacher, who was wrecked here in 1635. A giant fog-signal siren roars out, and the three keepers and their families are all lined up on the catwalk as we dip in farewell and fly on up the coast.

Far to the northward the Isles of Shoals begin to take form, and soon we reach this pleasant cluster of islands off the New Hampshire shore. Keeper Leighton was in charge of the light here for many years, and his daughter Celia so loved the islands that she wrote many poems about her experiences there.

We soon reach the almost-too-slender

beacon on Boon Island. In 1710 the *Nottingham Galley* was wrecked here, and the men saved from the disaster began to starve. When one of them, the carpenter, died, his body was sliced up by the others and eaten. The captain and several other survivors were rescued shortly afterwards. The ship's master, Deane by name, published the whole story of his voyage when he returned to England.

As we fly over the lonely edifice the keeper comes out on the catwalk and waves us a hearty welcome, and we roar by and throw him a bundle of papers. Now off the Maine coast, we head for Pemaquid Point Light. Keeper Sawyer here was a classmate of President Franklin D. Roosevelt at Harvard College. Around the close of the 17th century a ship from England, the *Angel Gabriel*, was wrecked here, and one passenger, Bailey, was so overwhelmed by his terrible experiences that he wrote his wife a long and realistic account of the shipwreck. She had planned to follow him to New England in a few months, but his letter so vividly portrayed the dangers of the deep that she decided not to risk the trip, and remained in England for the rest of her life. Bailey, still remembering the terrors of his ocean voyage, never mustered enough courage to return for her, so they remained apart for the rest of their lives.

Many miles out to sea from Pemaquid Point lies Matinicus Island. About twenty miles away is a lonely rock, perhaps five acres in area, where stand the two towers of Matinicus Rock Lighthouse. In the year 1856 Keeper Burgess was prevented from returning to the island by a storm, and his eleven-year-old daughter not only took care of the two lights, but ministered to her bedridden mother as well. It was over two weeks before the storm went down and her anxious father was able to land on the island.

Soon we draw near Mount Desert Rock Lighthouse, located far off the Maine Coast.

On our way back down the coast we fly over Owl's Head Light, built on a promontory in Outer Rockland Harbor. Keeper Hamar runs the station here, and I have visited his comfortable quarters on this Maine ledge. His dog once saved the lives of those aboard the Matinicus mail boat, which had become lost in a blinding snowstorm. Hearing the boat's whistle the dog ran down

Graves' Light, in outer Boston Harbor, was first lit in 1905



to the fog-signal bell, grasped the rope in his teeth, and the sound was heard in time by the captain of the boat, who reversed his course and safely entered Rockland Harbor. The dog lies buried near the fog signal at Owl's Head Lighthouse.

Continuing back to Massachusetts, we pass Portland Head Light, where Longfellow composed many of his verses.

We now start out over the open sea for Highland Light, across Massachusetts Bay on Cape Cod. Situated on a high cliff, this beacon is the most powerful in New England, having a flash of four million candle-power. This area is a graveyard of American shipping; over 1350 vessels have been wrecked near the light.

Flying back from Cape Cod we pass over the most dangerous lighthouse along the entire New England coast, Minot's Ledge Light. The present lighthouse is one of the engineering marvels of the United States. Built on the site of a spindle tower which crashed into the ocean, the granite lighthouse rises sheer out of the sea to a height of 114 feet. It is only at low tide that the ledge can be seen on which the light has been built.

Keeper George H. Fitzpatrick, noting our presence below, is standing on the outside ladder attached to the tower, inviting us to "come aboard". This manœuvre is a delicate one, consisting of stepping from our skiff onto the bronze ladder without getting a ducking, but the careful mariner can do it.

As we reach the entrance landing, Assistant Keeper Brides grabs us securely, and our long climb is over. Here on the lower landing built inside the tower is the oil tank and the new refrigerator, the keeper's pride and joy. We can actually be served with ice-cream made in this oil-burning ice-box! But let us go up to the top of the tower. Each circular room is, of course, directly above the other, so we pass through the assistants' quarters, the engine-room, the head keeper's quarters, the kitchen, and finally find ourselves in the watch-room, located in the lower turret. Here we all sign the visitors' book.

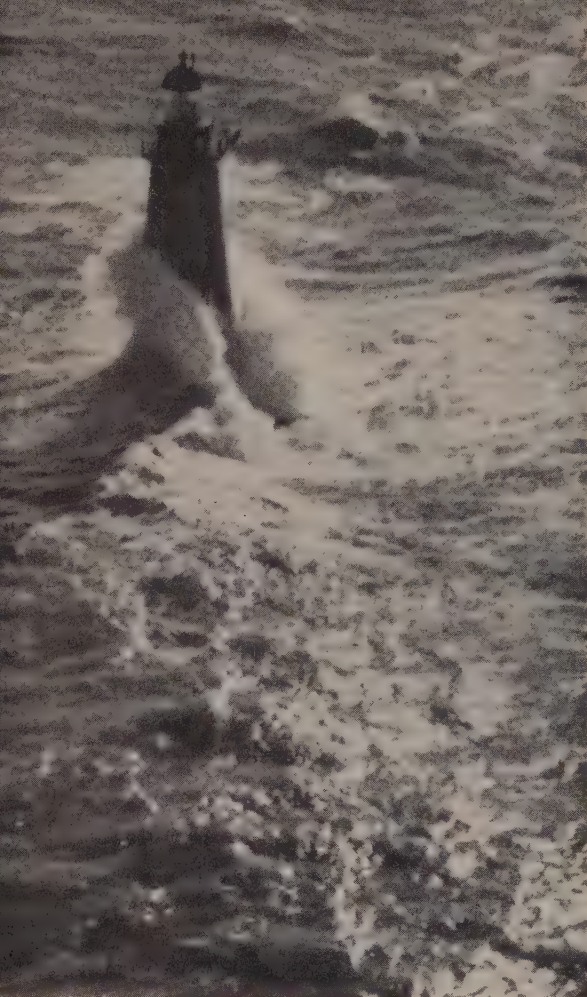
Back in the early days of the 18th century many vessels were lost on the ledges here, but it was not until around 1830 that Congress was petitioned to allow a lighthouse to be erected at Minot's Ledge. Captain William H. Swift began work on it in 1847. For only a few hours a day was the rock even uncovered, and about one day a month the sea was calm enough to allow drilling and cutting. Swift decided to erect iron piling on the ledge, build it up to a height of 60 feet,

cap the piling, and put a lighthouse and watch-tower on top, making the complete lighthouse 75 feet high. Nine iron piles were finally erected, and the tower completed except for the light mechanism, when a storm swept the coast. A small brig from England, the *Saint John*, was thrown against the ledge and 140 Irish immigrants were lost. It seemed a bitter jest that the light which could have guided the captain safely into Boston was first illuminated on January 1, 1850, less than three months after this disaster.

Keeper Isaac Dunham was the first man in charge at the tower, and he soon sickened of his position, for the tower developed a terrifying sway whenever a storm hit the ledge. When summer came, he told builder Swift that he would not stay another winter at the light unless the lower braces were reinforced. Swift chided him for his fears, and nothing was done. Dunham, true to his word, resigned, so the charge of Minot's Light was placed in the hands of an Englishman, John W. Bennet, who chose as his assistants Joseph Wilson and Joseph Antoine, a Portuguese boy. December 1850 brought the first of the dreaded wintry gales, and the tower rocked worse than ever. The following March Wilson visited Boston, and was interviewed by a writer on the *Boston Post*. He feared for the safety of the tower, but said that he would stay as long as the light lasted, and would then try to swim the mile to the mainland.

Head Keeper Bennet went to Boston in April to purchase a new dory. While he was there, the great storm, still known as the 'Minot's Light Gale of 1851', began. He tried to row out to the light, but the great waves pushed him back. All hopes of reaching the light were then abandoned. The gale attained hurricane proportions by the afternoon of April 16, and all Boston was cut off by the high tides which swept across the Neck that prevents Boston from being an island. The people now began to think of the swaying lighthouse tower eighteen miles away, and when evening came the common topic of conversation was — What of the light?

Back at Minot's Ledge Light the two keepers had clung desperately to the swaying tower. As the tide rose great waves beneath the watch-tower began to hit with terrific force right under the platform itself, and the men knew their doom was near. Obtaining a bottle, they wrote on a slip of parchment, 'The light will not last the night', signed it, and cast it into the waves. The bottle was later found and is now in the possession of the Hingham Historical Society. Meanwhile, back on shore, hundreds of families were



A 75-foot wave hits Minot's Light: the landing at the top of the ladder is almost submerged. The Keeper's dory can just be seen lashed over on its beam ends so that it will not fill with water from the ocean ninety feet below

watching from their homes for the flash of the beacon. During a lull, the blinking of the lighthouse lamps could be faintly made out. At midnight the lights were seen no more, and an hour later a violent ringing of the lighthouse bell could be heard above the roar of the storm. Morning revealed that the Minot's Ledge tower had fallen into the sea. The body of Joseph Wilson, who had said he would try to swim ashore, was found in a cleft in the Gull Rocks, while the body of Joseph Antoine was picked up ten miles away on Nantasket Beach.

Later in the month a party of engineers, including Captain Swift, visited the ledge. They found that the iron piling had been broken off like pipe stems about five feet above the rock. The tower itself was located by divers about a hundred yards away.

Captain Barton S. Alexander, U.S. Army Engineer, was chosen to plan a new lighthouse, but it was not until 1858 that the lowest rock was laid, about four feet below the low-tide mark. This difficult problem was solved by placing a circle of sandbags around the area and pumping out the water from the interior of the circle. Then a thin layer of cement was spread, on top of which a piece of thin muslin was placed, to prevent the cement from washing away. A section of the ledge had been carefully cut away the exact size of the granite block, which was now lowered into the cavity. The last of 1079 blocks was placed during the summer of 1860, and the light first flashed out on November 15, 1860.

In 1894 the light was changed to a 30-second sequence of one-four-three, which lovers along the shore have interpreted for their own benefit to spell out —, (I), — — — (LOVE), — — — (YOU). A pessimistic gentleman once upset my story by saying, "To be sure, but it also spells 'I hate you.' " But his is a minority view!

As we step aboard our plane we look up at the great tower, realizing that in the furious storms which sweep this section of the Atlantic sixty, seventy-five and one hundred-and-twenty-foot waves are frequently thrown up against the sides of the lighthouse. In 1909 the keeper saw a wave go half again as high as the tower, making it 170 feet in height. I have photographed these waves many times, and it is a thrilling experience to watch the fury of the sea from an aeroplane above the ocean during a storm.

Twenty minutes later we have climbed into the heavens again. Circling the stone tower below us, we signal farewell to Keeper Fitzpatrick, alone with his helper at this sea-swept lighthouse. We have joined that small group of adventurers who can say they have climbed perilous Minot's Ledge Light, America's most dangerous beacon. A half-hour later we land in the bay at Boston.

As our plane is hauled out of the water at the Commonwealth Airport, our farewells must be said. It is my sincere wish that the day may come, in the not-too-distant future, when I shall have the privilege of escorting a reader of these lines on a trip to one of our New England lighthouses.

Undeveloped South America

Lands of Tomorrow

by F. A. KIRKPATRICK, F.R.Hist.S.

It has been rightly said that when—just 450 years ago—Queen Isabel of Castile accepted and aided Columbus's audacious design to traverse "The Ocean Sea" (*el mar oceano*), her decision was a "great act of faith"—faith in the future. That note of faith was confidently re-echoed a few months later when Columbus, on his return from his westward quest after touching the fringe of the New World, declared: "All Christians shall here find refreshment and gain". Some twenty years later Balboa, second in the roll of Western discoverers, wrote from the Isthmus to the Spanish King concerning "great secrets of marvellous riches"—secrets to be revealed in the future.

The origins of Spanish America recall the human note pervading the whole story of South American growth: a stirring record of hopes, endeavours, trials, illusions, set-backs, recovery and solid achievements. The bare statistics do not disguise the tragedies as well as the triumphs through which these results have been attained. Such vicissitudes mark the development of all new lands and are not peculiar to South America. But South American progress in the past and the promise of its future continuance offer a special appeal to the imagination owing to something unexpected, uncommon and bizarre in the contrasts that distinguish South American scenes: frozen heights and torrid valleys; earthquakes and showers of ashes; volcanic peaks in the central regions of tropical heat shooting their fires far above slopes of perpetual snow; dense jungles and immeasurable treeless plains; rivers, which rival seas, with a yearly rise and fall of forty feet or more.

The proud device imprinted on the coinage of Spain—*Plus ultra* ("Farther yet")—provides a significant text for anyone attempting to gauge future possibilities in the light of past realities. For this pregnant epigram is not only a proclamation of advance already accomplished, it is also a prevision of the future. Its bold prophecy has been abundantly

fulfilled by the achievements of four centuries and today still points onwards.

The continent of South America is a clearly-defined geographical entity, much less in extent than North America, yet covering a substantial area: about double that of the United States, including Alaska. The population, according to the latest available

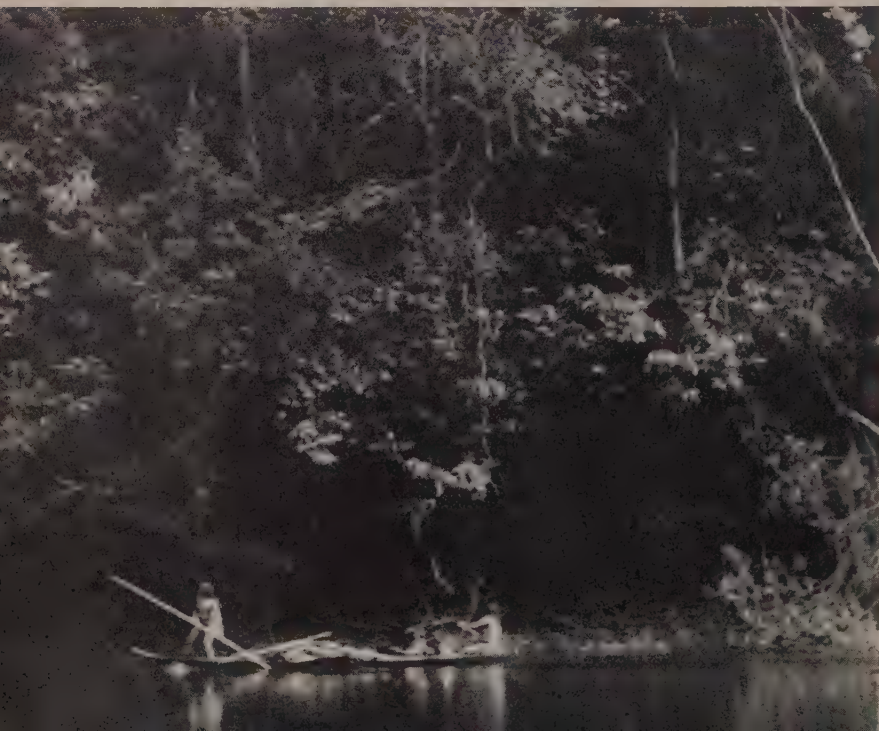


Stanford, Lond.



Black Star

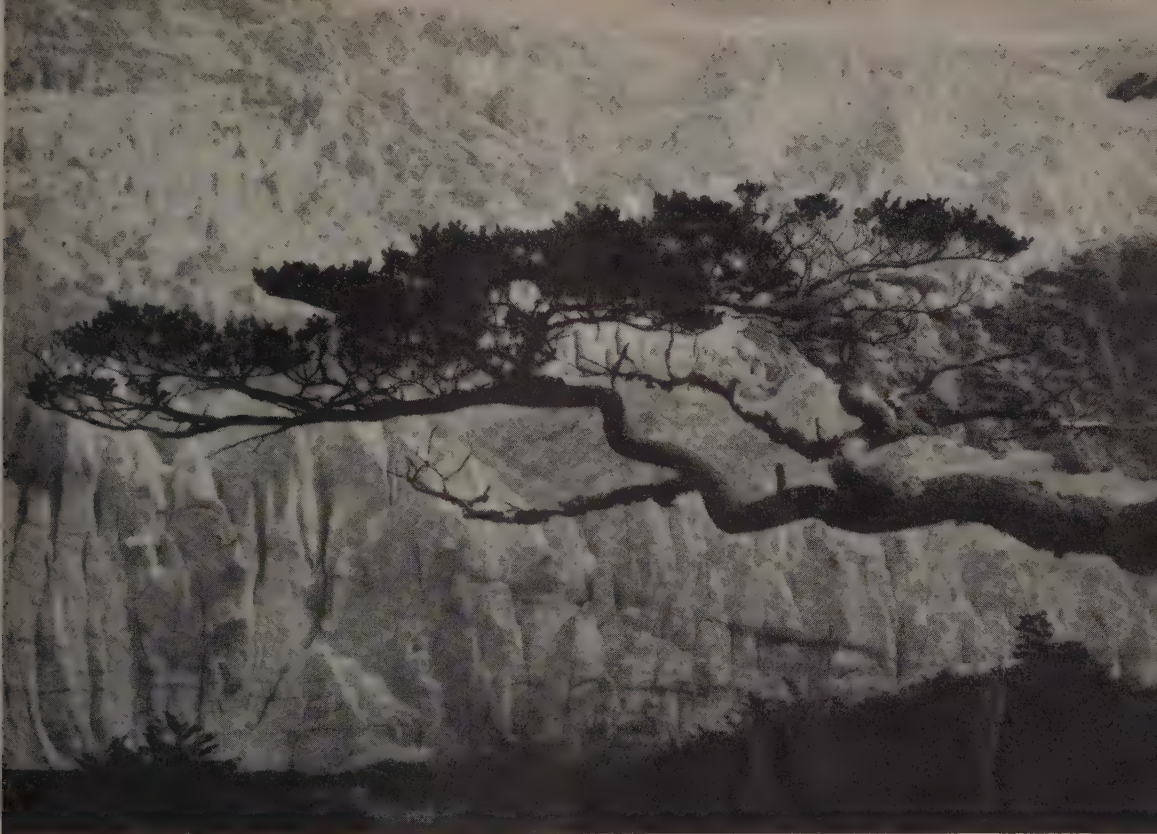
The Andes. In their vast extent of over 4000 miles the Andes show much variety of climate, altitude and aspect. Here is a characteristic view of the higher Cordillera in the tropics, which reveals a mountainous mass of bare rock reared into the clouds from the lofty plateau



Barnaby's

The Amazon River. An Indian family, expert navigators of their native-built canoe, make their way slowly upstream, skirting the shore to avoid the force of the current. The picture shows the dense and dank undergrowth of the Brazilian jungle beneath the shade of the lofty trees

(Opposite) Tierra del Fuego. This curiously misnamed 'Land of Fire'—so called from Indian camp fires seen on the shore by the early navigators—has nothing fiery about it: a bleak, frosty region where westerly gales force vegetation close to the ground



Black Star

statistics, is 90 millions—less than two-thirds of the United States population—but this is probably an over-estimate. Clearly there is room for increase and expansion—as the title of this article implies. The continent measures 67° of latitude from the tropical Caribbean coast southward to Antarctic seas. It extends, in a broad mass, through northern equatorial regions and traverses the whole of the Southern Tropics. Thence, narrowing southward, it thrusts itself into the cool regions of the South Temperate Zone, far beyond the furthest limit of other southern continents. Thus, to quote from *Latin America* (Cambridge Historical Series), South America,

extending through every habitable latitude, possesses every climate and every variety of soil, and accordingly yields, or can be made to yield, all the animal and vegetable products of the whole world. Moreover, most of the South American republics also contain territory of every habitable altitude, so that a man can change his climate from torrid to temperate and from temperate to frigid simply by walking up-

hill; and equatorial lands can produce within the range of a few miles all the products of every zone. Most of the republics also furnish an abundance and variety of mineral products.

The dominating feature of the continent is the vast mountain chain—in great part a system of two or even three parallel ranges—the Cordillera de los Andes, which follows the Pacific coast for above 4000 miles: the longest mountain chain in the world, and in its towering height only surpassed by Himalayan peaks. This stupendous barrier, which might be described as an eccentrically placed watershed, shapes the whole continent. The eastern range of the Cordillera, with its precipitous descent towards the interior, gives rise, through tropical rains and melting snows, to countless streams which rush down through rocky mountain gorges and then wind through low-lying lands to create the colossal water system of the Amazon, the Orinoco and the western affluents of the Paraguay. Thus, springing from sources not far distant



from the Pacific, these waters traverse the whole continent and find their way to the far Atlantic. Such, in the main, is the origin of the huge Amazonian forest, the dense and lofty woods which fill the greater part of the Amazon valley and extend southwards along the Paraguay. The great forest is inhabited only by sparse Indian tribes; it is a hot, damp wilderness of teeming vegetation, with a prolific soil, but for the most part unexplored except where navigable watercourses admit access to its sombre recesses. Some of these waterways are great rivers, affluents of the Amazon, navigated by steamboats. Others, more numerous, are obscure channels or offshoots, which provide a path for the canoe of the rubber-gatherer. But exploration from the air in recent years is preparing the way for fuller knowledge and possible future use.

The western slopes of the Cordillera, facing the Pacific, offer a singular contrast. Here, between the Ocean and the towering barrier of bare rock, there stretches for a thousand

miles through Southern Peru and Northern Chile a long strip of rainless desert. The dry sterility of this forbidding region enables it to supply fertility to other lands through its deposits of nitrate and guano.

The Cordillera of the Andes northwards from Tierra del Fuego—here for the most part a single chain with many outlying spurs—separates the long narrow territory of Chile, “shaped like the sheath of a sword”, from the broad plains of Argentina. Thence the chain divides northward into two parallel ranges, enclosing between them the plateau of Bolivia, a temperate land within the tropics, at a height of 9000–12,000 feet above sea-level, or even higher. Northward again the Eastern and the Western Cordillera draw somewhat nearer, to enclose the mountain region of Peru, traversed by an intermediate range. North of Peru the two main ranges approach one another to form the famous ‘Avenue of Volcanoes’ in the Republic of Ecuador, which borders a plateau or wide valley at a height



Black Star

(Opposite) Architectural legacies of two civilizations in Peru: on the left, examples of the Spanish Colonial style in the city of Cuzco; on the right, Machu Picchu, where a pre-Inca civilization, extinct and forgotten long before the Spanish conquest, has left imposing monuments, notably this ruined city in the Peruvian valley of Urubamba. (Above) Brazilian jungle: this picture, taken from the air, shows not indeed the majesty but the monotony of the Brazilian jungle and its inexhaustible stores of timber. (Right) Mother and child of the Caraja Indian tribe, from Central Brazil. Note the broken china worn as a necklace by the child



Barnaby's



Barnaby's



Barnaby's

(Above) A Brazilian Government hospital in pleasant rural surroundings, typical of recent advances in hygiene and social service. (Left) The Patagonian Pampa interrupted by an isolated pillar of rock, 160 feet high and likely to fall at any moment. (Below) The São Paulo railway which by a series of gradients surmounts the Brazilian plateau, linking Santos with the city of São Paulo



San Paulo Railways



Paul Popper



Barnaby's

(Left) *The mountain valleys and uplands of Ecuador enjoy perpetual spring, fruitful in fair landscapes such as this.* (Right) *Patagonian log house, with a roof of hollowed tree-trunks serving as tiles: an ingenious adaptation of available materials*

of 7000-9000 feet. North of Ecuador the mountains gather into a 'knot' (*nudo*)—a tangled mass of great height and complexity. Thence they spread out through Colombia into three parallel ranges enclosing between them the deep and fertile valleys of two rivers, the Magdalena and the Cauca, which flow northward and unite at a distance of 200 miles from the Caribbean Sea. Finally the Andes—as it were in a last titanic effort—come to an end by thrusting out a great Alpine mass into Venezuela, south of Lake Maracaibo.

The Andes are the historic—almost mythological—treasure-house of the West. Among their heights the Spanish conquerors found vast stores of gold and silver hoarded or utilized by Inca or Chibcha lords. Then the conquerors worked for themselves, with forced Indian labour, the veins of precious metals, repeatedly increased by fresh discoveries, enriching the Spanish crown and amazing the Old World with the "Treasures of the Indies", sent in great fleets across the Atlantic Ocean. And still today the Andes yield their mineral treasures: chief among them gold, from Colombia; silver and copper, from Peru; tin (replacing the former output of silver), from Bolivia; but from all these countries comes a variety of other minerals.

Nor is the promise lacking of a yet more opulent future. The obstacles to richer development are the difficulties of access and transport through desolate mountain regions. The higher mountains must remain inviolate,

inaccessible to the miner and prospector. But, owing to recent advances in mechanical transport, there can be no doubt that in coming years virgin fastnesses of the Andes will be forced to yield fresh treasures, some still to be discovered, others known to exist but out of reach: for example, the almost limitless deposits of silver which lie untouched beneath the surface in Peru.

Two examples of South America's unsuspected wealth, one from the past, the other from our own day, support this forecast. The first dates from 1545, when an Indian herdsman, climbing a steep hill on the bleak plateau of Upper Peru (now Bolivia) grasped a small shrub to aid his ascent. The plant came up in his hand, and adhering to its roots were bright pellets. They were pure silver. Thus 'The Hill of Potosí' revealed itself, and soon became the richest and most populous place in the New World, for thousands of Indian serfs drove tunnels through the hill to bring out the precious ore and the name of Potosí became a proverb for fabulous wealth. Hardly less striking is the second example, from our own times. Until 1929 bismuth was not worked in Peru. Less than a dozen years later Peru had become the world's largest producer of bismuth; the result not of a sudden sensational find, but of patient enterprise, and for that reason more encouraging for future advance than the story of old Potosí.

Since development is in great degree a matter of policy, administration, maintenance of order and safeguarding of industry by law, the political divisions of the continent claim

attention. Of the ten South American republics, seven have been already named and their positions indicated. Two of the remaining three republics are the small Rio-Platenese ones which take their names from the rivers Uruguay and Paraguay, countries which are Spanish in origin and speech, like the seven previously named. In Paraguay, Spanish is the language of government, press, literature and society. But the vernacular is Guaraní, the Indian tongue, spoken by the peasantry and understood by all. Uruguay borders on the Atlantic; Paraguay is landlocked, but seated on a navigable river with access to the sea. Last of all I come to the gigantic Republic of Brazil, which spreads over almost half the continent and comprises an area greater than that of the United States without Alaska, and roughly equal to that of the nine Spanish-speaking republics put together.

In order to round off the continent, it is necessary to mention the three European colonies which occupy the north-eastern corner, British Guiana, Dutch Guiana and French Guiana or Cayenne. These three little countries are the only part of South America not Iberian in origin.

* * *

Argentina in economic outlook faces towards Europe and Great Britain and has first claim on our attention, owing to the great part there played by British investment and British activities. With an area ten times that of the British Isles and a population of $13\frac{1}{2}$ millions—the republic extends 2300 miles from the Tropics to Antarctic seas and forms, with Uruguay and Paraguay, a sub-continent, 'The River Plate', which differs from the rest of South America in the fact that progress here comes entirely from the soil—the products of pasture, tillage and forest, minerals counting for almost nothing. The only considerable exception is the oil-field of Comodoro Rivadavia in the south, which, with some smaller wells, supplies three-fourths of Argentine home consumption. Thus future development means not any new departure but continuance of the astonishing progress since the first shipment of grain sixty-three years ago. Four probable lines of advance—nothing exhaustive and nothing novel—may be indicated: first, more intensive tillage; second, further irrigation, which besides its earlier work in the west, has

transformed a sterile tract on the Rio Negro into a rich fruit-growing district; thirdly, increased growth of tropical and semi-tropical crops in the warm north; and last, the provision of means enabling a man to acquire permanent tenure of a moderate-sized farm on easy terms. The wind-swept Patagonian steppes do not invite populous settlement. A very different and less forbidding northern region, the Chaco, though rich in timber and pasture, is not a field for dense population. But Argentina possesses ample space where the population may multiply, spaces marked out by soil and climate to be the seat of a great civilization of European type.

* * *

Concerning the Republic of Uruguay, which I described in a recent number of this Magazine (October 1942), a word may suffice. Development here, as in Argentina, means not fresh adventures but continuance of the work done in the past and still in progress.

Paraguay with a million people and 160,000 square miles of good soil—predominantly forest, but also much pasture—awaits development as future need may arise. Clearances in the eastern forests open up very rich agricultural land. But already the country has achieved a rare and interesting development, supplying the needs of the people—mostly living in primitive condition—almost entirely by local production and manufacture, so that imports are surprisingly small. Few countries are so self-sufficing.

* * *

Chile, besides its long strip of tropical desert, divides with Argentina the temperate zone of South America. If the word 'undeveloped' means something backward or neglected, it does not apply to either of these countries. The rich lands of Central Chile, the coalfields, the abundant and varied mineral deposits of the north, the sheep pastures of the far south, the growing factories, the water-power of the mountain streams, doubtless promise future expansion but do not invite uninformed criticism or suggestion. It would be inappropriate here to make more than brief allusion to the vast estates of the aristocratic families, a topic which

Lake Titicaca, 138 miles long, 12,500 feet above sea-level, is navigated by native Indian rafts (balsas)





Paul Popper

A street in the outskirts of Quito, capital of the Republic of Ecuador: a typically Iberian scene, which might easily be taken—loaded asses included—for a corner of some ancient city of old Spain

from the plateau in cascades and cataracts, offer water-power to the unborn industries of future generations. Inland navigable waters, in great part not yet navigated, measure many thousands of miles.

* * *

Here, then, in the remote Brazilian hinterland, is 'Undeveloped South America', lying dormant until the needs of the world gradually call it into activity. But it also extends far beyond the western frontier of Brazil. The unexploited and hardly yet explored regions lying east of the Andes are unequally divided between Brazil and the tropical Andine republics. Forests and grassy plains stretch over the vacant eastern spaces of Bolivia; further north are fertile Bolivian uplands annually flooded by the northern affluents of the River Madeira. The thickly wooded *montaña* of Peru and *Oriente* of Ecuador resemble in general the neighbouring forests of Brazil. The people of Colombia, inhabiting the Andine region and the Caribbean coastal plains, hardly realize that they possess also a great far-away land of forest and plain watered by Amazonian streams and uninhabited save by scanty tribes of savage Indians. Of Venezuela it may suffice to say that half of that country is covered by virgin forest, a "reserve of untapped resources" and likely to remain long untouched in view of the stretches of Brazilian forests which are traversed by navigable rivers.

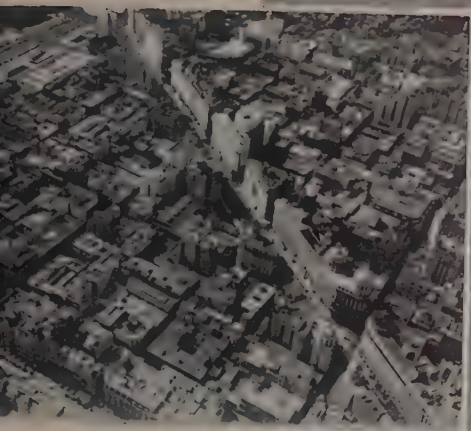
* * *

It would be rash to look for an early or rapid development of the immense interior wilds of South America. The disastrous overproduction of Brazilian coffee in past years is a reminder—if any were needed—that the difficult task of gradually reducing these wilds to the fruitful service of man must depend on an expanding world demand for the commodities there to be produced. It is also a task which requires energy, manpower and capital. At all events, here is ample scope for the adventurous pioneer and for a touch—as in the past—of "something unexpected, uncommon and bizarre", defiant of probability and sober calculation.

finds some place in Argentina also. It should be added that a rough and unpromising southern region—partly impenetrable forest swept by summer rain from the Pacific and by winter snows—is almost unexplored. But the true 'undeveloped South America' lies far away, in the tropical and sub-tropical lands.

The magnificent beauty of the Brazilian capital typifies not merely the actual wealth of Brazil, but also the future riches to be won by bringing to life the dormant resources of its vast territory. "No country in the world," wrote Lord Bryce, "owned by a European race, possesses so large a proportion of land available for human life and productive industry." This may be amplified by quoting from a recent writer, Stefan Zweig: "Potential forces not exploited . . . inexhaustible reserve of resources . . . the development of Brazil is still in its infancy, nor can any power of imagination predict what this country, this world, holds in store for future generations".

South of the Amazonian valley the main feature is the great Brazilian plateau, providing, within the tropics, at least a million square miles of temperate land, richly productive. Both here and in the lower lands, as transport (the main difficulty) improves, as roads, or rather rough tracks, open up new land and penetrate the forest, the soil can yield multifarious crops in tropical profusion. But besides this potential wealth of the soil, Brazil possesses valuable mineral deposits which are worked only to a limited extent. The forest contains stores of timber of many kinds, mostly untouched. Rivers, descending



Barnaby's

The small photograph shows the chessboard pattern of Buenos Aires and also a modern diagonal avenue cutting through the plan. The larger picture shows an amusing contrast, a girl on the flat roof of her home hanging out the family linen, under the shadow of a modern sky-scraper



Barnaby's



The Civil Wars of England

by C. V. WEDGWOOD

Three hundred years ago England was a battlefield—for nearly a decade. The author of this article, who as historian of the Thirty Years War has made a special study of the warfare of the period, writes here of the geographical background and conditions of England's Civil Wars; the strategy, equipment and tactics of the Cavalier and Roundhead armies. Above are contemporary portraits of Cromwell (from a painting by Samuel Cooper) and Prince Rupert (from an engraving by William Faithorne)

THE Civil Wars of England lasted, with one long intermission, for about nine years. It was in September 1642 that first blood was drawn in a skirmish at the village of Powick Bridge opposite Worcester on the Teme, and in September again, nine years later, that the battle of Worcester ended the war, almost in the same fields. The spatter of scars from musket balls on the south wall of Powick church tower is from the later, not the earlier, battle.

The political significance of the Civil Wars is so great that their military history has been, if not positively neglected, at least submerged. Not entirely, of course, for Cromwell's organization of the New Model Army and Rupert's famous cavalry have been obvious subjects of study. But Clarendon, the leading historian of the war, was a civilian, and few of those who fought, certainly neither of its two outstanding soldiers, were great hands

with the pen. Cromwell's despatches are brief, tough, impressive, but throw all too little light on the purely military side of the war. Rupert, a proud and silent man, neither boasted of his victories nor explained his defeats: he left the most obvious errors of Clarendon unanswered.

The Civil War is part of our political heritage; the principles for which our ancestors fought are still alive to us. It is part of the literary and romantic tradition of this country, bringing back nostalgic visions of fluttering banners and Van Dyck faces, of vain heroism and thundering cavalry charges, of stern-faced men with Bible and sword going into battle to the chanting of a psalm. And for most of us it is a part of our childhood, for who has not played Cavaliers and Roundheads? But we do not easily fit these imaginative pictures to what we know of the English countryside, and the battle-fields of

the Great Civil War remain for the most part neglected sites. Occasionally there will be a monument to some distinguished casualty—Hampden has an obelisk at Chalgrove Field; Falkland, Sunderland and Carnarvon share another at Newbury; but at Naseby the monument is in the wrong place and at Edgehill it is the wrong monument, for the grey monolith on the side of the steep slope where the trees end was erected to a soldier who fought at Waterloo.

The strategy of the Civil War in its larger aspects has not been much studied, and this is understandable for the English Civil War is a curiosity of military history with rules of its own outside the ordinary line of development. Its strategy was bound up, one might almost say swaddled up, with the social structure of the country, limited by the peculiarities of the political situation; it could not be planned according to the military rules and practice of Continental fighting, but was amenable to the brilliant manipulation of talented amateurs. It was indeed a war in which the professional soldier was at a disadvantage. Of the numerous Englishmen who had been trailing their pikes in Flanders for want of employment at home and who hurried back to fight either for King or Parliament, few achieved any real distinction, though many were efficient and experienced in the minutiae of their profession. Thomas Fairfax, a man whose sheer thoroughness and determination (he was a Yorkshireman) amounted nearly to genius, and the brilliant, unstable George Goring were perhaps the only two professional soldiers who made any significant mark. More often professional ideas interfered with the freedom of invention and action which English conditions offered, and once at least the cocksureness of a professional caused disaster: when Colonel Hurry, fresh from the battle-grounds of Germany, drew up the cavalry on the right wing at Marston Moor in the highly complex Swedish fashion with the musketeers between the horse, a formation equally unsuited to their training and the terrain on which they were fighting.

It is significant that the two men who best understood and exploited the situation were both, if not exactly amateurs, at least beginners in their profession. Cromwell knew nothing whatever of warfare before he acquired his captain's commission in the summer of 1642, and Rupert, although he had served in the Netherlands and Germany, as a ranker in the Prince of Orange's life-guard and later as an officer, had spent his last four years as a prisoner of war when, at

the age of twenty-two, he was appointed Lieutenant-General of the King's Cavalry. Cromwell was therefore too ignorant and Rupert too young to be bound by the accepted rules.

The civilian population, too, was ignorant of the rules. No war had been fought in England for a century and a half and the attitude of a fat and prosperous people, used to orderly government, was very different from the embittered, helpless resignation of the German and Flemish peasantry. Foreign towns knew only too well the blackmail of *Brandschatzung*—the indemnity which the General of an occupying army demanded in return for preventing the sack of the town; English towns had never heard of such a thing, and when Rupert, assuming the existence of the custom, exacted a sum from Leicester, great was the indignation of the city fathers, and great the speed with which King Charles ordered his nephew to pay it back. It was the first rule of continental warfare which had to be unlearned in England, for here each side strove not to terrorise, but to pacify and win over the civil population.

Whence, among this peaceful people, arose the armies which appeared with such terrifying speed in the summer of 1642? England had an antiquated system of defence, the local levies. These hastily mustered yokels were almost entirely untrained, and although provision was supposed to be made for their equipment, very little was ever to be had; a few old pikes with a helmet or two of an Elizabethan model were often as much as could be found for them.

London had its trained bands who had been exercised occasionally in the handling of pikes on fine summer evenings. The King, fearing trouble with the people, had created a small life-guard shortly before the outbreak of the war. For the rest both sides relied on troops of volunteers raised by wealthy or patriotic gentlemen who defrayed the expenses themselves, recruiting the men on their own estates and arming them according to their own caprice. If they chose to equip them with battle-axes or bows and arrows—and on occasion we find both of these antiquated weapons in use—to tie coloured ribbons on their shoulders or encase them from top to toe in armour—as did Sir Arthur Hazelrig with a regiment immediately nicknamed the 'Lobsters'—no one was going to stop them.

The armies of both sides, therefore, presented a motley appearance. Some were too much armed, some were not armed at all; there was uniformity neither of equipment nor

dress. Some wore red, some wore blue, some undyed cloth—they would dye it in the blood of their enemies. No definite mark distinguished the King's men from Parliament's. Officers of the Royalist forces wore red sashes, Parliamentary officers orange, but it is not to be supposed that the supply of sashes was at first equal to the sudden demand, nor that the reds and oranges hastily bought up or fished out of the oak chest by a thrifty wife did not vary through every shade, and approximate inconveniently to each other. Mistakes between friend and foe were frequent and often bloody. A further confusion was added during the opening phase of the war by the Parliamentary habit of referring to the Royalists as the 'rebels' and themselves as the party of King and Parliament. (One remembers Hampden's device: Not against the King I fight, but for King and Commons' right.) Some enthusiastic French gentlemen who had hurried over to England to defend their countrywoman, Queen Henrietta Maria, enlisted in error under the wrong flag.

As well as the victims of such strange misunderstandings there was a fluctuating fringe of professional soldiers who changed sides to suit themselves; some were Scots or Irish mercenaries, some Englishmen, one or two came from further afield, like that Croatian Captain of whom John Aubrey tells, who openly declared, "I care not for your cause but for your half-crowns and your handsome women."

To the professional trained abroad there was no dishonour in changing sides. The arrangement was a business contract, and an officer who resigned his commission in one Continental army was wholly at liberty to take up a commission in another when he wished. Whole regiments shifted from side to side during the Thirty Years War with no one thinking the worse of them. But in this matter the English war proved to be different. We hear significantly much of prisoners. There was a concentration camp for Royalist soldiers at Coventry, and atrocity stories were told of the sufferings of Parliamentarians in Oxford Castle and of the King's men lodged in the hulks of moored vessels in the Thames. As for the Royalist officers, the Tower of London had rarely been more fully, or more gaily, populated.

When flowing cups run swiftly round
With no allaying Thames,
Our careless heads with roses bound
Our hearts with loyal flames . . .

The question of prisoners was one on which the rulings of the foreign-trained professionals were an inadequate guide; in the German

Wars large numbers of prisoners were not taken; the defeated were simply absorbed into the army of the victor. But the English quaintly regarded changing sides as dishonourable; it might be done but never with credit. "Walter Baskerville," we read in the contemptuous jottings of a Royalist soldier, "first for the Parliament, then for the King, then theirs, then taken prisoner by us, and with much ado took his pardon and now *pro rege*, God wott."

In other ways, too, the spirit of the English forces was peculiar to these islands. The rank and file, recruited from the peasantry from Wales, Cornwall, West Yorkshire, Lancashire and Cheshire on the King's side, from the eastern and the home counties on Parliament's, shared a strong spirit of individualism and independence. We speak loosely of the survival of 'feudalism' in England, thinking of our ancient landed gentry and the sentiments of loyalty and obligation between squire and tenantry; but we forget that in fact feudalism in its final form never developed in England, and the last vestiges of anything which a man from the Continent would have called feudal had vanished a century before the Civil War. No English landowner had rights of life and death over his people; few, if any, English peasants were rigidly bound to the soil. The troops which followed the standards of their local gentry were, taken by and large, more humane, more civilized, more reasonable than their counterparts abroad. But they were also more stubborn, more argumentative and, until they had commanders who understood them, less trainable. Added to this, some of them took a stand on their rights and could not be gainsaid.

The men of the local levies refused to fight outside their own counties, which was indeed one of the presumed conditions of their service, and it was only with extraordinary persuasion that Sir Ralph Hopton managed to bring the Cornish infantry—the finest in the Royalist army—out of its native duchy, nor in spite of a plan of campaign which was intended to end only in the recapture of London, did this particular section of the King's army ever appear further westward than Devizes, where at Roundway Down they had the pleasure of tumbling Sir Arthur Hazelrigg's ridiculously encased 'Lobsters' down one of the steepest chalk slopes in the Wiltshire downs.

A further problem in discipline and organization was set by the gentlemen volunteers, who although only a sprinkling of the whole army and usually grouped together into a troop, were a perennial



By courtesy of the British Museum

Seventeenth-century cannon bombarding a town, from the contemporary etching by Stephano della Bella. The wicker screens between the guns were earthed up to provide cover for the gunners

obstruction to discipline. The gentry of England knew nothing of war—again how un-feudal!—and carried both their pleasant manners, their social distinctions and their strong individuality into battle. At that time nobody was brought up on the military doctrine of “theirs not to make reply, theirs not to reason why”. They answered back and reasoned why in and out of season, with the utmost nonchalance. What a world of obstructive young subalterns is conjured up by the ingenuous tribute paid by Waller to Cromwell, who, as a junior officer, “did not argue upon his orders”!

After more than a century of peace England was naturally behind Europe in her armaments, a fact which for once did not matter, since no foreign nation was involved. The demand for arms in the opening months of the war far outran the supply, and officers coming back from abroad must have laughed to see the antiquated pikes and Elizabethan helmets in the ranks of both armies. Everything was in short supply. Birmingham manufacturers, cashing in on the King's necessity, put out a line in cheap swords, for a consignment of which Charles contracted, until Prince Rupert, raging over hundreds of

snapped weapons, threatened to resign if his cavalry were issued with any more “Brummagem blades”. English pistols too seem at first to have been oddly unreliable: they would go off suddenly, backwards, or misfire altogether. Or perhaps they were only mishandled by amateur soldiers. Prince Rupert, a singularly striking target and frequently the object of deliberate attentions, got through the whole war with nothing but a graze on the shin-bone, which suggests a low standard of aiming. It was poor Sir George Lisle, facing the firing squad after the surrender of Colchester, who called to his executioners to come closer, and when they would not, pleaded, “Friends, I have been nearer you when you have missed me.”

Heavy artillery played a larger part than has generally been allowed. It was of inestimable value in sieges, and the Civil War was a great war of sieges. Transport was a perennial problem, for the cannon were enormously heavy for their power, would stick in the muddy roads holding up the progress of an entire army, and as often as not leave a wheel behind them when forcibly hauled out. Yet, in spite of the difficulty of transport, guns were used conventionally in

the Continental manner in pitched battle, where they pounded away to very little effect before the opening of the action. When Cromwell in 1648 left his entire artillery behind while he raced in advance to cut off the Scots Royalists at Preston, he was sacrificing superiority in armaments to speed and surprise in a way which a conventional soldier of the time would have thought absurdly dangerous. His decision was fully justified by the event.

But in siege warfare the cannon were really important, and indeed the King's weakness in this important arm was certainly one of the factors in his defeat. The battering power of the big culverins and demi-culverins, twenty-pounders and twelve-pounders respectively, at close range—about 300 yards—was terrific. A sustained bombardment would smash down the average city wall effectively enough for the besiegers to fight their way in, and comparatively few cities failed to surrender after a serious bombardment.

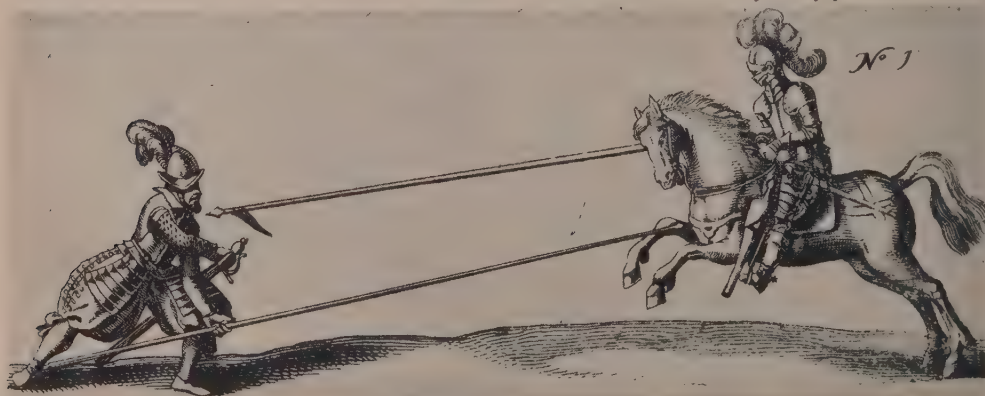
Banbury was an outstanding exception, for here the Royalist colonel, Sir William Compton, a boy of nineteen, kept the garrison working in shifts day and night throwing up an earthwork behind the outer wall until, after fourteen weeks' resistance, he was at length relieved. Colchester, in 1647, surrendered not so much to hunger as to superior artillery. The batteries of the defenders gave out for lack of ammunition and Fairfax was able to move his heavy guns into a position from which they could have raked the town. Gloucester, besieged by the King in 1643, held out until the trained bands of London,

in a fervour of devotion, marched across the Cotswolds to its rescue, simply because the King had not enough ammunition for his guns, and so could not smash his way in. The capture of Waller's guns at the otherwise small skirmish of Cropredy Bridge turned it into an event of importance to the King, and it is notable that at the second battle of Newbury Prince Maurice carried out an elaborate and dangerous manoeuvre in order to secure the King's artillery, first collecting the guns into Donnington Castle and posting a guard over them, then retiring to Oxford, collecting reinforcements and making a lightning advance across the Berkshire downs by night to Donnington, to convoy the guns safely back into Oxford. Not for nothing did the Parliamentarians call Maurice, Rupert's less spectacular brother, the "good come-off".

The musket was the most important fire-arm in general use in the 17th century, and the musketeers were a class apart, the aristocrats of the infantry. In England, a country even in those days of ditches and copses, and deep lanes fringed with hedges, a skilful captain could do wonders with a handful of musketeers. We find them lining the long hedge on the Royalist right flank at Naseby field, preventing Fairfax from manoeuvring his army or outflanking the King. We find them contesting the transverse hedges and orchard walls in the first battle of Newbury, an engagement which was not so much a pitched battle as a crossword puzzle of single skirmishes in the enclosed market gardens and orchards on the outskirts of the little town. When during this battle Falkland, the King's

(Below) *Illustration from a Dutch manual of infantry drill, showing the correct position of the pike in defensive action. (Opposite) Donnington Castle, near Newbury, whence Prince Rupert's brother Maurice rescued King Charles I's artillery after the second battle of Newbury*

By courtesy of the British Museum







Packer

(Above) Chastleton House, where the Royalist owner hid after the battle of Worcester; his wife having drugged his pursuers, he escaped while they slept. The proximity, seen here, of a house to a church with a tower suitable for use as a gun emplacement, is a characteristic of the English landscape that caused the surrender of many Royalist garrisons in isolated country houses. (Below) Edgehill, taken from approximately the centre of the King's position

Herbert Felton



Secretary of State, tired of a conflict to which he saw no profitable end, rode his horse at a gap in one of the hedges, he knew that there would be musketeers on either side to pick him off; and accordingly found the death he sought. At Langport, where George Goring made the last serious stand for the King against the triumphant Parliamentary advance into the West in 1645, he held the ridge above the town by infesting the narrow lane which was its only access with the main strength of his musketeers. A narrow English lane, covered by musketry fire, was a death-trap to incautious cavalry. But Fairfax threw in the whole strength of his infantry to fight the Royalists back, foot by foot, at push of pike, from the knotted thorn trees and the high banks.

In hand-to-hand contest it was push of pike which ultimately decided the issue. And the pike, for all its simplicity, was an effective weapon when skilfully handled, both in attack and defence. The Continental pikeman could withstand, or at least break the impetus of cavalry attack; the attitude of defence was a lunge, the butt end of the pike resting against the instep of the hinder foot, the shaft steadied against the bent forward leg. In this attitude the skilful pikeman could fend off attack with the point of the pike controlled by the left hand, and keep his right hand free for sword play.

Could the London trained bands have done anything so complicated? One rather doubts it. As for the country levies, they found other uses for their pikes—when they had them. They were convenient for flicking the fruit off orchard trees, for hooking a new shirt from a housewife's line; they could be turned to account for hanging up a cooking-pot, punting a ferry across a stream, or even for chopping wood. "I cannot conceive what these fellows are doing with their weapons," grumbled Sir Ralph Hopton when yet another batch of infantrymen reported irrecoverable damage or loss.

The general strategy of the Civil War is obscured by innumerable local quarrels. Parliament strove from the outset to co-ordinate its supporters into associations and groups, of which the most important was the Eastern Association from which sprang Cromwell's army and the ultimate reorganization of the New Model. The King, paradoxically, diffused his energies and played up to local magnates in order to gain widespread support and undermine his opponents throughout the country. In pursuit of this system he fatally dispersed his energies, for by garrisoning isolated country houses he reduced the effec-

tive strength of the army which he was able to put in the field, and in the end the Royalist war came to an end in a series of heroic and useless resistances before, one after another, the fortified manors and fair country seats hauled down the royal standard. Some, like Basing House, fell only to assault and paid the penalty in the blood of the defenders.

One peculiarity of the English landscape assisted time and again in the reduction of these improvised fortresses. This was the position of the village church, so often within a stone's-throw of the manor. With its strong square tower the typical village church made a convenient station for a gun, by the threat of which the neighbouring house would be driven to surrender.

Before the King's main army was broken at Naseby and the isolated garrisons successively reduced, many had been the local fights and skirmishes between the small forces in these outposts and Parliamentary troops passing through the country. In the same way, though not so frequently, nests of Parliamentarians recruited and held together by local magnates molested passing Royalists, and in some stretches of country which saw none of the serious fighting, local jealousies and local quarrels kept up spasmodic disturbance.

The main strategic outline of the war is, nevertheless, plain enough. The chief strength of Parliament lay in the south and east, of the King in the north and west. He unfurled his standard at Nottingham, the most southerly point at which he could cross the Trent, in August 1642, struck south across the midlands collecting his forces, intending to march at once on London. The Parliamentary army under Essex barred his way below the sharp ridge of Edgehill in Warwickshire, but was sufficiently damaged in the action which followed on October 23 to make an immediate march on London and the capitulation of the city something more than a possibility. But Charles hesitated fatally and by the time his advance guard reached Turnham Green—the main strength of his army carrying Brentford by assault—the trained bands had come out to stop him and London was in a state of defence, with chains and barricades across the city streets and the Bowling Green at Hyde Park Corner the pivotal point of a system of outer defences of earthworks and batteries.

The King, however, decided to fall back no further than Oxford, thus making his headquarters at the apex of a triangle, of which the bases were in Lancashire, Wales and the South-West, extending forward into



Val Doone

Gloucester, showing the exposed position of the town encircled in hills. Besieged by King Charles in the summer of 1643, it was relieved by the London Trained Bands in a spectacular march across the Cotswolds

enemy territory. The Chilterns, with their steep north-westward face against the King, were to prove an insuperable barrier to any bold frontal attack on London; the town of Reading, in the only practicable gap, was bitterly contested, changing hands four times in the course of the war. The strategy planned by Prince Rupert for the reduction of London during the following year 1643, was the separate advance of the King's forces from the north and west in a pincer movement which was to converge on the estuary of the Thames just below the capital. He did not believe that this port and merchant city would hold out in the face of a threat to its very life-blood, the sea-ward approaches. He was probably right, but the plan came to nothing owing to the difficulty of moving the armies so far from their recruiting grounds. The men of the western midlands would not advance on London while the Parliamentary stronghold of Gloucester remained unreduced

in their rear. The west country men feared with equal reason the raiding of their homes and fields by the Parliamentary garrison which still held Plymouth, and the town of Kingston-upon-Hull was a menace to Yorkshire. The King's two fatal weaknesses prevented him from reducing any of these three cities. He failed at Gloucester for lack of artillery, and at Plymouth and Hull because such navy as there was had declared for Parliament, and kept the garrisons re-victualled from the sea.

In the following year, Rupert attempted to save the situation by a double preliminary campaign for the reduction of all subsidiary Parliamentary forces in the west and north before the march on London. The western campaign succeeded with the surrounding and surrender of the Earl of Essex, but the northern campaign ended in disaster at Marston Moor on July 3, 1644. It was a pitched battle which Rupert had not intended to



Packer

Compton Wynyates, whence the Royalist owner, in a ferocious night battle, vainly tried to oust the Parliamentarians. (Below) The flat plain of Marston Moor; sparse hedgerows and ditches provided almost the only cover

fight, and which was forced on him because Charles's military advisers in Oxford feared that the city might be attacked if the absence of the army were prolonged. In the circumstances one cannot but feel that the choice of so exposed and indefensible a site as Oxford for his headquarters was a disastrous handicap to the King.

The loss of the north was fatal to Charles's hopes. Moreover the Parliamentary army had now been reorganized under Fairfax and Cromwell. The strength of the Royalist army was annihilated at Naseby in June 1645—another pitched battle which Rupert had disadvised—and the final mopping-up of the King's scattered garrisons was merely a matter of time and patience. Attempts on the part of the King to stabilize a front further to the west, along the line of the Severn and behind the Cotswolds, with his headquarters at Worcester, failed completely. His last army from the midlands and Wales was sur-

Will F. Taylor



rounded and capitulated at Stow on the Wold in March 1646, his last western army at Truro a week earlier.

Parliamentary strategy, for the first part of



Stanford, London

the war, being purely defensive, was less interesting. It was also uninspired. In fact the Parliamentary side produced no strategist of the stature of Rupert. What it had was a superb tactician in Cromwell. Cromwell realized that until Parliament had cavalry which could outmanoeuvre Rupert's they would never be able to pass from defence to attack, and he set himself to develop that cavalry methodically, with infinite patience, making of his heavy-armed, perfectly disciplined, but swift and mobile Ironsides the model for the cavalry of the New Model Army.

And indeed when we think of that war, of the English countryside alive with the troops of the 17th century, it is always of the cavalry that we think. For the whole conformation of the land cried out for the exploitation of this arm. The wide stretches of unfenced common land, the huge sweep of the Wiltshire and Berkshire downs, the innumerable dents and hollows, rises and depressions of the midlands, made it the perfect country for cavalry fighting—not for pitched battles between charging squadrons of horse, although that might come in, but for skirmishing and raiding. It was the sort of country in which a small number of cavalry, cleverly used, might baffle, divide and defeat far larger forces. Which was precisely what Rupert, left to himself, was perpetually trying to do; as when dodging with lightning speed across the Yorkshire dales he drew the besiegers off from

York and slipped in to the relief of the city from the north, while Fairfax was still looking about for him on the western side. Moreover, cavalry had another advantage for these ill-provided armies, since horse and man could themselves be used as a weapon. Continental cavalry was armed largely with pistols and until the time of Gustavus Adolphus the method of the charge was to halt within firing distance of the enemy, discharge the pistols, and immediately wheel and re-form to charge again. There was no actual contact with the opposing force. Gustavus introduced the terrifying method of charging without a halt straight into the ranks opposite, firing only at the last minute. Rupert, whose troops, as we have seen, often had brittle swords and no fire-arms at all, taught his men to rely almost entirely on shock and impact. He turned horse and man into projectiles, and both at Edgehill and Naseby simply rode down the opposing ranks until they panicked and fled. Cromwell copied and developed the method, improving the armour and equipment of his troops until the impact of the Ironsides became like the impact of so many miniature tanks. Sheer weight drove them through the enemy.

Just as the English open country was specially suited to the swift and free movement of small bodies of cavalry, so the hedged lanes, the ditches and the banks gave special opportunities to the musketeers. In contrast to the wide scope of cavalry action were the many congested engagements fought out between infantry in the built-up and enclosed outskirts of many a quiet English town, or even in the outbuildings of some large manor-house. When the owners of Compton Wynyates attempted to recapture their house, fortified against them by the Parliamentarians, the outer wall of the park, the inner garden wall, the stable yards became the successive points of a frantic and embittered defence. In few wars can there have been quite so many actions in narrowly enclosed spaces or improvised strong-points. The country had few fortresses in a condition of readiness, so fortresses must be made as occasion demanded and offered. In one church at least, Alton in Hampshire, a band of trapped Royalists defended the length of the nave pier by pier, barricading themselves behind pews and tables, surrendering at last on the chancel steps. The conversion of Lichfield Cathedral into a fortress was a more deliberate act, for the Cathedral dominates the town; twice defended it was twice taken, and a great part of its fine red-sandstone Gothic destroyed in the process.



From 'Hollar's Views of London', by A. M. Hind (The Bodley Head)

(Above) The outskirts of London, south of the river. Hollar's detailed engraving shows clearly the square fields, fences and hedges always to be found in the neighbourhood of cities in the 17th century. (Below) Westminster at the time of the Civil War: the Houses of Parliament on the left. Notice the landing-stage and the passenger traffic on the river

From 'Hollar's Views of London', by A. M. Hind (The Bodley Head)



The English climate has not altered very much in three hundred years. Naseby was fought "about the noon of a glorious day in June", but Naseby was exceptional. The summers of the Civil War were typical summers; "a blustering cold day, and the evening very wett", or some equally depressing entry, is found time and again in the notes of contemporaries. That particular blustering cold day was in August. One can sympathize too with the Musketeers who were to "go resolutely forth by Sallies, in a dark, cold, blustering, rainy, tempestuous night". We all know such nights. But the climate was not subject to great extremes and therefore we hear less than we do in Continental fighting of the formal business of going into winter quarters and abandoning further manœuvres until the spring. If the larger movements of the war were, as one would expect, seasonal, there was intermittent fighting almost continuously. Ice was on the ground in some parts of England in the August of 1642, but the winters themselves were for the most part mild and muggy.

The Civil War was the last prolonged or serious war to be fought in England itself,

and centuries of peace have wiped away the scars. Here and there an ancient helmet or a pair of rusty spurs hang in a local museum; here and there a church wall is scarred with small shot, an ancient font carries the scratched initials of the soldiers who camped there, or a country house will preserve the story of some private act of heroism, by oral tradition, like the story of Arthur Jones's wife and her cool deluding of the Parliamentary soldiers to save her husband's life, which is handed down at Chastleton.

It is hard to see Turnham Green or even Newbury as once they were, and Wigan is no longer the "pretty village" through which Prince Rupert rode after his relief of Latham House; yet you may trace Cromwell's position with tolerable certainty on the rolling fields of Naseby and follow his brilliant manœuvres on the bald expanse of Marston Moor, or, walking the by-roads of England—for the battle-fields of the Civil War are essentially a walker's hobby—see suddenly that trivial hillock, this unimportant brook re-endowed with the terrible significance of some brief and bloody afternoon three hundred years ago.

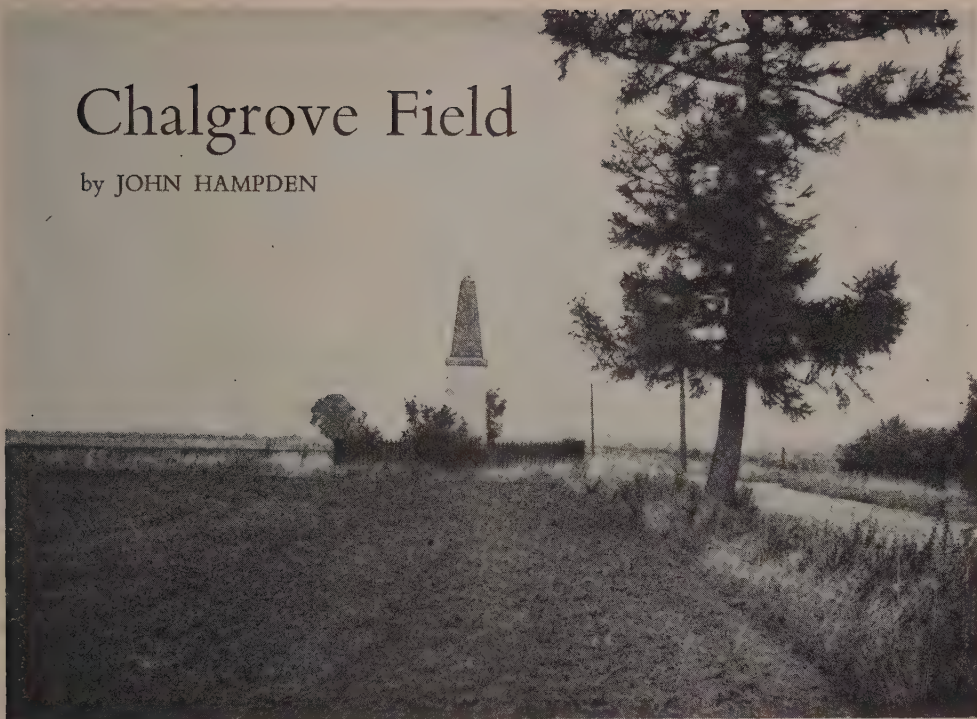


Rischgilt Studios

Lichfield, from an old print, showing the dominating position of the Cathedral. Used as a fortress, the central spire was destroyed and the west front heavily damaged

Chalgrove Field

by JOHN HAMPDEN



Mr Hampden has for some time been collecting information about the life and home environment of his great namesake, the Roundhead leader and champion of Parliamentary rights, the tercentenary of whose death after a skirmish with Royalist forces on Chalgrove Field is commemorated in this article

FROM the broad shoulder of Watlington Hill, which our National Trust has now taken into safe keeping, one looks west and north over one of the most serenely beautiful landscapes in England, which can have changed little in the past 300 years. Between the chalk ramparts and ancient beech-woods of the Chiltern Hills, guarding the approach to London, and the limestone plateau of Cotswold on the horizon, lie the level pastures of the Oxford clay, a hedged chequer-board of brilliant green meadows broken by occasional fields of brown earth, scattered trees, and the red brick and red tile of farmstead and village.

When Colonel John Hampden of the Buckinghamshire Foot last came to Watlington on Saturday, June 17, 1643, he had little leisure, but nevertheless he may have climbed the Hill to survey afresh, in his new vocation of soldier, the countryside he already knew so intimately. It may well be that he sat that

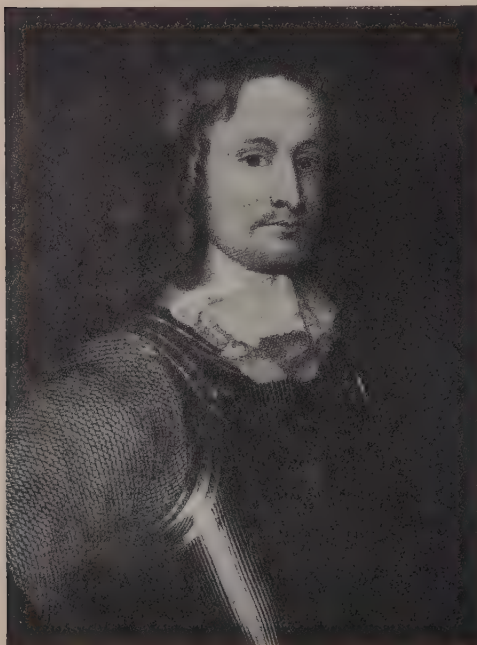
afternoon by the naked chalk of the ancient Watlington Mark and looked out over a scene, set for the trial by arms of the cause of English liberty, which was also a map of much of his earlier, happier life.

Behind him, in Buckinghamshire, lay the wide estates centring upon Great Hampden which his family had received from Edward the Confessor. In the Oxford plain, to the north, lay Thame, whose broad street was as familiar as his own home, for he had followed the family tradition by spending some years as a boarder at the Grammar School. To the north-east, eyes younger than his might just discern, or fancy they discerned, the tower of Magdalen College, Oxford, where for three years he had begun to acquire his considerable knowledge of history, before moving on to the Inner Temple to study law.

Below Watlington Hill, two miles away and almost hidden among its trees, lay Pyrton,



The Chalgrove country, from a map in 'The Natural History of Oxfordshire', by Robert Plot, Oxford 1677. It will be noticed that the roads are not marked. (Below) Portrait of John Hampden from 'Some Memorials of John Hampden', by Lord Nugent, published in 1843



where the marriage register still shows the entry: "John Hampden esq of Hampden, & Mtis Eliz. Simeon, d. of Mr. Edmund Simeon of Pirton, 24 June 1619." The Norman chancel arch and medieval porch of the little church, the dark yews, the beautiful Elizabethan manor which the Simeons held, are still much as they were on that Midsummer Day of the wedding. But for Hampden in 1643 the memories of Pirton shone from a land of lost content, for his beloved Elizabeth had been dead nine years; and three miles beyond Pirton were the wide unbroken levels of Chalgrove Field, which marked for him the active beginnings of hateful civil war. There in the previous August he had set up a standard bearing Parliament's device and his family motto, *Vestigia nulla retrorsum* (Not a step backward), and mustered the 20th regiment of foot, soon to become one of the best in the service of Parliament and known as the "Buckinghamshire Greencoats" from the green livery of the Hampdens.

On June 17, 1643, Watlington, Pirton and Chalgrove lay between Cavalier and Roundhead, the armies of King and Parliament. Charles I was at Oxford. The Earl of Essex,



By courtesy of Major Ducat-Hamersley

Pyrton Church and Manor, from a drawing made before the 19th century 'restorations'. Here, John Hampden married Elizabeth Simeon of Pyrton Manor on Midsummer Day, 1619

who had taken Reading from the Royalists on April 27, had removed his headquarters to Thame on June 10. The antagonists faced each other uncertainly, for on neither side was there a skilled and resolute command or a strategic plan. Hampden was profoundly uneasy. If indeed he surveyed the countryside from Watlington Hill he may well have looked longest to those scattered outposts which Essex had set up at Tetsworth and Postcombe on the Oxford-Wycombe road, and at Chinnor and Watlington below the Chilterns. These were his immediate anxiety because they were so obviously exposed to any sudden raid by the Royalist cavalry under Prince Rupert of the Rhine. Any such raid must cross the River Thame, and Essex held the Wheatley bridgehead to the north, but only four miles beyond Chalgrove and less than seven from Oxford was Chiselhampton Bridge—unguarded. It was an open invitation to Rupert, whose impetuous daring as a cavalry leader had already been amply proven.

Essex held the supreme command, and there was little Hampden could do. He was all the more scrupulously loyal because he

knew of the agitation to put him in Essex's place. He had never sought fame or advancement. He had never sought war. But he was among the few on both sides who realised from the first that this war could not be ended by negotiation and that no war can be won by hesitating to fight it: "he threw away the scabbard when he drew the sword." And he could not help knowing how men looked to him. Early in his Parliamentary career, which began in 1621, he became associated with the growing opposition to the dictatorial claims of the King, and after his famous refusal in 1635 to pay twenty shillings as Ship Money, on the ground that the King had no legal right to levy it, his influence was second to no one's except John Pym's. "Then he grew the argument of all tongues," wrote the Royalist historian, Clarendon, "every man inquiring who and what he was that durst at his own charge support the liberty and property of the kingdom . . . [and when the revolutionary Long Parliament began] the eyes of all men were fixed on him as their *Patriae pater*, and the pilot who must steer their vessel through the tempests and rocks that threatened it. And



Will F. Taylor

The Icknield Way, near Chinnor: a prehistoric 'Green Lane' which here runs along the foot of the Chiltern Hills

I am persuaded his power and interest at that time was greater to do good or hurt than any man of his rank hath had in any time: for his reputation for honesty was universal and his affections seemed so publicly guided that no corrupt or private ends could bias them." When the statesman turned soldier in 1642, at the age of forty-eight, he showed himself again the born leader of men, with great physical courage. Characteristically he disclaimed military ability, but in this matter of the outposts he was, not for the first time, proved tragically right.

On that same Saturday afternoon, Rupert rode out from Oxford over Magdalen Bridge with some two thousand horse and foot. His guide was Colonel Urry, a Scottish soldier of fortune who had very recently changed sides and brought to the Royalists not only full information about the outposts but (most probably) the news that a treasure train was on its way that week-end from London to Thame, with £21,000 for the payment of Essex's troops. Before dark the arches of the

ancient bridge at Chiselhampton echoed to the hoofs of the Royalist cavalry, as now they echo to the Bren-gun carrier, but thereafter the raiders made only cautious progress. Striking across country from Stadhampton to the Wycombe road, they passed through Tetsworth at one in the morning, Rupert giving orders that the fire of the Parliamentary guard was not to be returned. At Postcombe two hours later there was a brisk skirmish, with casualties on both sides, and they made better speed across the fields to Chinnor, which they surrounded before dawn. There two hundred dragoons of the Bedfordshire Regiment, weary raw recruits, were surprised asleep and nearly all killed or captured in their shirts. But by this time the alarm had spread. The 14th-century church, which is still Chinnor's pride, was lit by burning houses which beacons the countryside. Word came to Rupert that the treasure train had taken refuge in the Chiltern beechwoods, where it would be hopeless to follow; and he was only four miles from Thame. So,

says a contemporary Oxford pamphlet, "His Highness commanded away to horse, bending his march homewards all along under the ledge of hills to the south and south-westward. But yet on purpose with so slow a march that the Rebels (if they pleased) might have leisure to confront him. And so it happened. . . ."

John Hampden had slept the night at the old (not the present) 'Hare and Hounds', in the comely little red-brick town of Watlington. News of the raid came to him early that Sunday. He had no force of his own, but he joined a troop of horse under Captain Cross, which mustered more likely than not outside the ancient 'Barley Mow' where now the Home Guard musters on Sunday mornings. Hampden, and others, must have realized at once that if the Royalists could be delayed until a strong force from Thame reached Chiselhampton, Rupert would be killed or taken, and the war half won. But whether Essex could be persuaded to act promptly was another matter.

At nine o'clock, with considerable Parliamentary forces closing in from Easington and Thame, Rupert called a halt in the great cornfield of Chalgrove, and sent all his infantry "to lie on both ends the bridge" and prepare an ambush along the lanes leading to it. But he did not draw the pursuers into the ambush, for his rearguard was already suffering casualties and suddenly he lost patience. "Yea (saith he), their insolency is not to be endured." Turning his horse, he set spurs to it and, alone, leaped the long hedge beyond which the Roundheads were mustering. His life guards followed, and then the rest of his force as best they could. The Roundheads met them gallantly. "To say the truth", says the Oxford pamphlet, "they stood our first charge of pistols and swords better than the Rebels have ever yet done", but Rupert's men not only had the advantage in numbers, they were better cavalry, better led. Taken in the front and on the flank, the Roundheads broke and rode for their lives, leaving perhaps fifty dead among the corn.

It was then, apparently, that Hampden came upon the field, bringing up reinforcements from Warpsgrove and rallying the flyers to make a fresh stand. "Colonel Hampden . . . charged with much courage", said Essex in his despatch. Again they were flung back. Rupert kept the field for half an hour, expecting further attacks which did not come, and then set out for Oxford, which he entered in triumph by two o'clock, dragging 120 miserable half-naked dragoons,

with many prisoners "of condition" besides. "He had sent the news of all before by Colonel Urry, whom the King presently knighted."

The Court had far better cause for rejoicing than it knew at first, for in leading the last charge Hampden received two carbine bullets in the shoulder. He rode "off the field before the action was done, which he never used to do, with his head hanging down, and resting his hands upon the neck of his horse". Tradition has it that he turned first towards Pyrton, only to be turned back by parties of Royalist horse, and that his lifelong friend Arthur Goodwin, Colonel of the Buckinghamshire Horse, overtook him before he had gone far. But alone or befriended he rode through the heat of the June day with his life slowly ebbing. Most probably he crossed Haseley Brook by the 'splash' in Pyrton Lane, where now the teasles flourish; he avoided Haseley Court, for the Huddlestons were Royalist; and according to tradition he stopped for a drink of water at a cottage in Little Haseley. Beyond Haseley the undulating fields rise slowly towards Thame, and if presently he turned to look back to Pyrton and his familiar Chilterns the countryside was again spread out like a map below him, but now it was a map of defeat, with the sun glinting here and there on the helmet of a wounded straggler who was picking a way among the sentinel elms. At least he can hardly have failed to remember on that ride the Latin verses he had written for *Lusus Palatini*, thirty years before, to celebrate the marriage of James I's daughter Elizabeth to the Elector Palatine; his verses declared that the offspring of that marriage must be incomparable, and the offspring was Prince Rupert.

Riding slowly by long familiar lanes and fields Hampden came presently to Thame, passed the Grammar School for the last time, and halted by the Town Hall in the broad street. There he was helped from the saddle and into the house of Ezekiel Browne the surgeon, which tradition identifies with the building that was for long the Greyhound Inn, but is now sadly changed. He lived six days longer, with Arthur Goodwin beside him, and mastered his pain to dictate letters to Parliament, urging the more resolute prosecution of the war. Concern for his recovery was not limited to his own side: the King offered the services of a surgeon. But on June 24 he died, and next day he was taken back to his own woods, to be buried in the church at Hampden. The leadership passed to his greater, more ruthless cousin, Oliver Cromwell.



King Cotton

by CLAUDE BIRTWISTLE

WHEN cotton was first used no one knows. Its cultivation in India and the neighbouring islands dates back thousands of years. It appears to have been known in Egypt at least six centuries before the birth of Christ, probably as an import from India. Its introduction to the nations of the west took place at a much later period, and seems then to have been regarded as a luxury.

It was introduced to Europe by the Spanish Moors in the 9th century A.D. They cultivated it in the Plains of Valencia, and cotton manufacture was soon established at such centres as Grenada and Seville. But five centuries passed before it was imported as thread into England.

In America the manufacture of cotton cloth appears to have been carried on by Peruvians and Mexicans long before the advent of the British settler. By the end of

the 18th century the main suppliers of British cotton were the British West Indies, Asia Minor, the Levant, Brazil and the East Indies. The North American continent was not among them, although soon after the U.S.A. began to export in increasing quantities until they became the world's largest producers.

* * *

The cotton plant is a sub-tropical perennial shrub. Usually, it is treated as an annual, which increases its yield. The fibre is obtained from the seed-pod, or boll, which opens when ripe disclosing the fibre attached to the seeds. This fibrous covering swells out into a mass about the size of a small apple which can then be easily picked. After picking, the fibre is separated from the seed by a process known as ginning. The seed is a valuable by-product, since much of the richness of the land absorbed by the plant goes into it. It is used for the manufacture of cotton-seed oil, or the winter cattle-feed known as cotton-seed cake or oil-cake.

The length of the fibre is known as the staple, and this is what governs quality. Cotton of staple less than an inch and an eighth is known as 'short-stapled'; above this length it is 'long-stapled'. The longer the staple the better the quality of the fibre; some long-staple varieties are as long as two and a half inches.

The various species of plant differ in size, colour of flower, length, strength and fineness of fibre. The areas of production are not all able to use the species producing the best quality fibre; in India, for example, the cotton is of a short-stapled variety, the staple being often only half an inch.

The plant's sub-tropical nature gives it a northern limit of cultivation at about latitude 40° N. It is also grown in the tropics where climatic factors are suitable, *e.g.* the uplands of Brazil and India. In these areas, however, the tropical heat has a tendency to produce coarseness of fibre.

The plant cannot withstand frost, so that an essential climatic requirement is that the entire period from planting to picking shall be frost-free. The length of this period is about seven months. A temperature of at least 60° F., with plenty of bright sunshine during the ripening period, is necessary. The best soils are light, limy ones or sandy loams, and manuring has been found to increase the

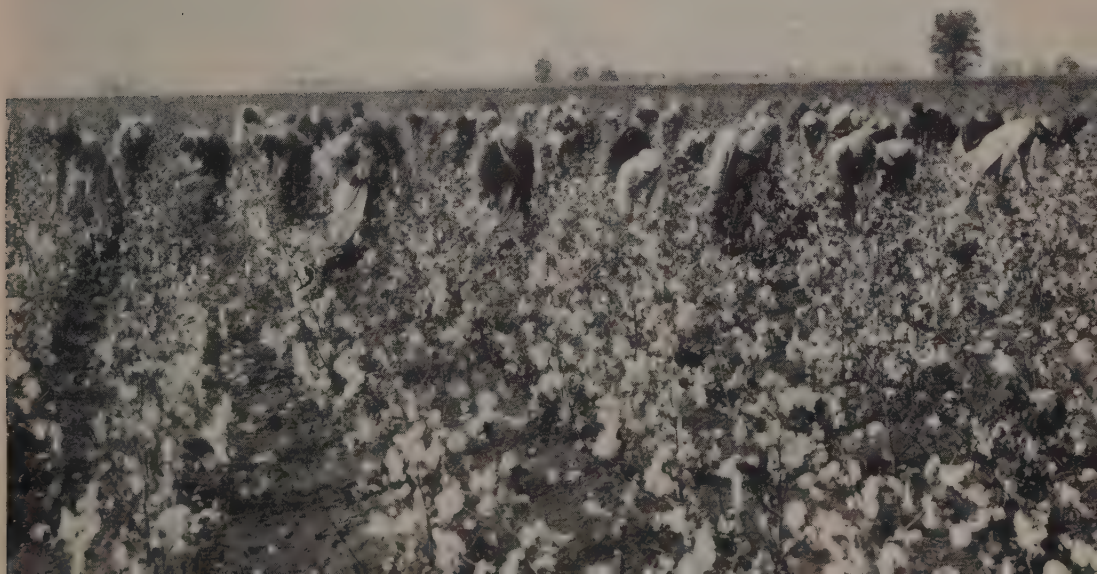
(Right) *Ripe and unripe bolls, or seed-pods, on the cotton plant.* (Below) *Cotton pickers near Memphis.* *Mechanization has failed to surpass the effectiveness of hand-picking.* (Opposite) *Seed-pod of the cotton plant which has ripened and burst open*

yield, the increase due to manuring in some parts of the U.S.A. amounting to thirty per cent. The plant also requires a rainfall of from twenty to forty inches, although it is grown in Egypt and India by irrigation. Irrigation has also been resorted to in the extreme west of the U.S.A., where the plant is increasingly cultivated in order to escape the ravages of the boll-weevil.

The main cotton-producing countries are (in order of importance) the U.S.A., India, China, U.S.S.R., Egypt and Brazil. Minor producers include Turkey and Iran, Argentina and Peru, the plateau region of Mexico, parts of the Transvaal, Sudan and Uganda. Uganda, where the cotton is produced on the plateau areas, is the second Empire-producer of cotton; India, of course, is first in importance. It should be noted, however, that the six main areas mentioned



From Claude Birtwistle



produce almost 90 per cent of the total world output, while the U.S.A. alone produces roughly as much as the other five put together.

The Cotton Belt of the U.S.A. extends eastwards from Texas in a broad band across the south-central part of the country almost to the Atlantic coast. The name 'Belt' is as fallacious as it is when applied to the Corn Belt, or the Wheat Belt, etc. For the area is not continuous, and quite apart from strips of heavy production alternating with those devoid of cotton, nowhere does one find field after field of cotton, and nothing else but cotton, as far as the eye can see. For even where production is heaviest the farmer utilizes some part of his land to provide food crops for himself and his livestock—the most important being his horses. But the immensity of the areas under the crop, the heaviness of the production and the enormous population it supports are hard to realize.



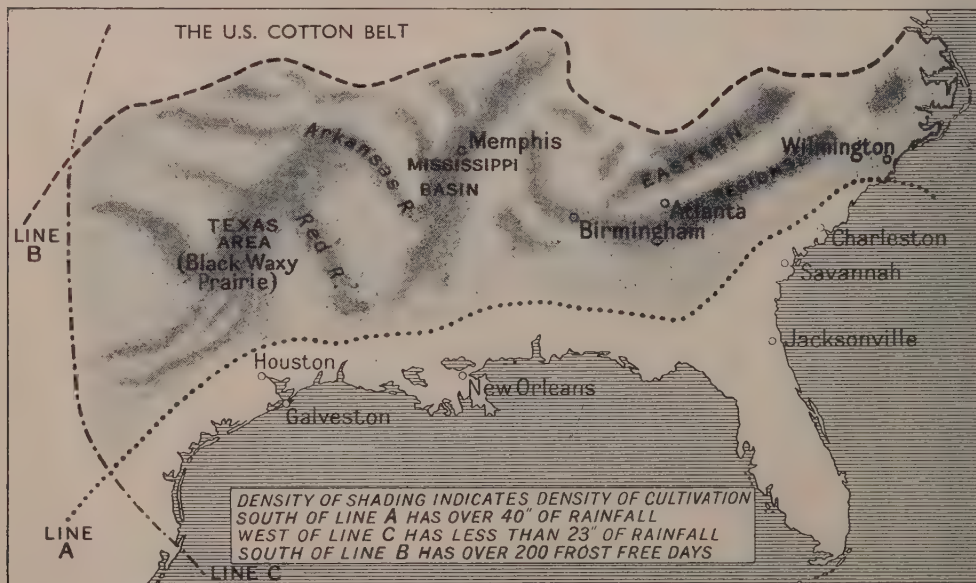
Stanford, London

The greatest pest of cotton production is the cotton-boll weevil which entered the area in 1895 from Mexico. Its first appearance was in the lands adjoining Mexico, and it quickly spread from Texas eastward until it covered the entire area. The larvae of the weevil eat their way into the cotton-boll before it opens and spoil the fibre.

The difficulty of combating weevils is increased by the speed with which they multiply, one pair increasing to about 12 millions in a year. The only successful method of destroying them so far discovered is to spray the plants with calcium arsenate, at the same time destroying all bushes and shrubs in the area which may provide winter quarters for the weevil. It appears, however, that the weevil has two natural enemies, drought and frost; and though these are the natural enemies of the plant also, some attempt has been made to take advantage of the fact in growing cotton in the drier area of western U.S.A. This necessitates the use of irrigation, and the area is producing well.

India stands second to the U.S.A. in world production of cotton, but the quality on the whole is poorer than the American product. The cotton is short-stapled, and the yield per

(Left) Cotton-growing areas. (Below) The Cotton Belt of the United States of America



Stanford, London

acre is less than 100 lb. compared with around 170 lb. in the U.S.A. The quality, though, is improving, which enables it to be used increasingly in Lancashire mills, where a long-staple variety is needed.

In India the plant is grown in areas with a rainfall during the growing period of from twenty to forty inches and under irrigation. Irrigation enables a better quality cotton to be produced. The plant used is the introduced American variety. The importance of increasing the amount grown by irrigation in order to improve the quality of the Indian crop is obvious.

The chief producing area is in the N.W. Deccan on the fertile 'Black Cotton Soils'. Crops are produced without the use of irrigation owing to the moisture-retaining soil, but the area often experiences heavy rain and periods of drought. This, coupled with poor farming methods, gives a low yield and a poor quality. The irrigated area of production is in the north-west, in the Punjab and Sind.

China follows India in importance as a cotton-producer, but the crop is now used internally. It is cultivated mainly in the central and northern provinces, the chief area

being the valley of the Yangtse River and the Hwang-ho Basin. It is also cultivated as a summer crop as far north as Peiping.

The U.S.S.R. is another country whose raw cotton output is consumed by home industry. For some time the home production had to be supplemented by imports, but imports have lately shown a steady decrease.

The extension of the railway system has led to essential foodstuffs being grown increasingly to the north of the country, thereby releasing more land in the south for cotton-growing. The cotton is grown by irrigation, the main area being the Ferghana Basin.

The other main producers are Egypt and Brazil. The latter is the most important area in South America, although accounting for less than 5 per cent of total world production. The cotton is grown in the upland area to counteract the excessive tropical heat, but even so the effect of the heat is shown in the coarseness of the fibre.

Egyptian cotton is of the finest quality, Egypt being probably the world's best cotton land. The continuous bright sunshine coupled with irrigation give not only good cotton but a heavy yield, the Delta region producing over 400 lb. per acre. The plant is also

In the U.S.A. Cotton Belt the boll-weevil causes much destruction. Of the methods of combating this pest so far tried, the most effective is dusting the crop from the air with calcium arsenate

From Claude Birtwistle





Dorien Leigh

(Left) *Piccaninnies in the cotton fields of North Carolina.* (Right) *A cotton ginnery at Kavirando, Kenya. In the ginning process the fibre is cleaned of the seed and other impurities before being baled for export.* (Below) *An Assamese girl flocking cotton by a more primitive method*

grown along the banks of the Nile in Middle Egypt.

In normal years the British cotton industry takes the larger part of the export. This, and the fact that the acreage under cotton is second only to that of maize and exceeds wheat, shows the dependence of Egyptian prosperity on the sale of its cotton crop, and explains the British Government's action in purchasing

the Egyptian cotton crop of the last few years although they have not been able to ship it from the country.

Britain's imports of cotton before the war were decreasing, owing partly to an increase in artificial silk manufacture, but more to increased foreign competition.

Cotton manufacture can be divided into three main operations: spinning, weaving and

Dorien Leigh





Dorien Leigh

Hand cotton manufacturing industries have been badly hit by the flood of cheap quality fabrics poured on the markets in recent years. Assamese women putting up a hand loom

finishing. When the fibre has been separated from the cotton seed by the process of ginning, the raw cotton is pressed into bales and despatched to the factories. Here the actual manufacture starts.

The bales are opened and the cotton loosened. The various qualities of cotton are mixed in different proportions to suit the type of yarn it is desired to produce. During the mixing process the fibres are cleaned of dirt, and the whole is then passed on to the carding engine. This consists of numerous rollers with projecting wires rotating at different speeds, drawing the fibres into a narrow, thick ribbon. This ribbon is called a 'sliver' and is passed on to the drawing-frame, which, also by means of rollers rotating at different speeds, draws out the slivers into a thin uniform sliver. The slivers may be passed through numerous drawing-frames in order to obtain a high degree of uniformity.

The slivers are then subjected to slubbing which imparts a slight twist to the sliver, thereby giving it the form of a circular thread. This is known as 'rove yarn', and it is drawn out and further twisted in the spinning frame to produce the finished yarn. The two most used types of spinning frame are known as the methods of 'ring-spinning' and 'mule-spinning'; the latter particularly is used for the finest yarns.

The change from hand spinning to machine spinning took place as a result of numerous inventions. The introduction of rollers was first undertaken by Paul and Wyatt, but the

greater development of the spinning machine is due to Hargreaves of Blackburn who invented the spinning jenny (1767) whereby eight and more threads were spun at once onto vertical spindles. In 1769 Arkwright of Preston invented a spinning frame using rollers and driven by water power, while about 1779 Crompton of Bolton invented the mule jenny which could be driven by steam power and was the forerunner of the modern self-acting mule.

The great invention in weaving was the flying shuttle invented by John Kay about 1750. By this invention the shuttle was automatically returned to one side of the loom ready to be sent across and back again time after time. Previously it had to be thrown from side to side of the loom by two people.

After spinning, the yarn is often dyed in order that designs (*e.g.* stripes and checks) may be woven into finished cotton. If this is not done, the cotton is manufactured in its white state—commonly called 'grey'—then finally dyed in the piece or printed with some design in one or more colours. After spinning, the yarn is often also bleached, or doubled, or mercerized, or otherwise prepared. The various yarns are then divided into those for warp and those for weft. In the former the weaving process uses simultaneously many hundreds of threads, lying horizontally adjacent to each other for the entire width of the finished cotton, while the weft is introduced as a single thread.

Warp yarn has to be much stronger than weft, as the warp is subjected to greater tensions during the process of weaving. To obtain this strength, and also to prepare the warp on a 'beam'—a large bobbin-like structure—for insertion in the loom, the yarn is treated by one of numerous methods. It is despatched from the spinners either on bobbins or in large balls or 'cheeses', and 'beam-

ing' consists merely of running these threads onto the beam so that they are spaced equally to the width of the beam, which corresponds to the width of the finished cotton. Another method is warp-dressing which is used for the more complicated patterns, *e.g.* fine stripes, and also necessitates constant brushing of the warp during the time it is being run onto the beam. This increases the quality of the

Cotton fibre for export is compressed into bales of about 500 lb. each. A barge laden with cotton in the Mahmudieh Canal, Alexandria. Egyptian cotton is long-stapled, of the best quality, and is in great demand throughout the world. Lancashire, specializing in better quality cottons, uses considerable quantities



Dorien Leigh

finished cotton and is particularly suited to better-class goods.

A third method is by the 'wet tape' which consists of taking the warp yarn from numerous bobbins, from cheeses or from beams onto which it has previously been run, passing all the threads over rollers where they are treated with starch solution, then over steam-heated cylinders and winding dry onto the weaver's beam.

After the spinning process the fineness of the threads is denoted in 'counts' which means the number of lengths of threads, each 840 yards long, contained in 1 lb. of the yarn. The counts vary from 18's up to about 100's, but above this degree of fineness is introduced what is known as 'twofold' yarn, consisting of two threads twisted together; these may go up to 160's, usually known as 'twofold 160's'. Such yarns are naturally of the best quality and the most expensive owing to the high degree of fineness.

The number of threads, or 'ends' as they are called, run onto the weaver's beam varies with the fineness of the yarn and the width of the cloth, but with the finest cottons as many as 6500 ends are run side by side onto a beam thirty-two inches wide; the finished material in this particular instance is fine shirting cotton.

Reeds consist of numerous fine parallel wires fixed so that there are narrow spaces between each through which the ends can pass; they are used in the loom to keep the ends in true position during the weaving process. The threading of the warp through these reeds is done by the loomer and the beam and reed are then fixed into the loom.

Between the beam and the reed the loomer has drawn the threads through the eyes of the 'healds'. Healds are lengths of fibrous string or wire containing in their length a small hole through which the thread can be drawn. When fixed in the loom, the healds work in various combinations which lift some of the ends above the others, thus making a space through which the shuttle can pass, leaving behind it a thread. The healds then change, lifting a different lot of ends, and the shuttle returns once more, leaving the thread and thereby introducing the weft into the warp. The different combinations of ends lifted by the healds can be made to produce designs in the cloth.

Another way of introducing variety of design is by the check loom which uses two or more shuttles filled with different coloured yarns. These are contained in a cylindrical arrangement which automatically turns into position the shuttle containing the particular

colour of weft required for the part of the design being woven. This alternate use of different colours of weft produces a check design in the finished cotton.

As the cotton is woven in the loom it is drawn forward onto a roller from which it is cut and removed in 'cuts', *i.e.* lengths of fifty yards and upwards, varying with the type of cloth. These pieces are then sent to the cloth-looker who carefully examines them, removing slubs, lumps or any foreign matter which may have been woven in or attached to the cloth.

The cotton is now ready for finishing, a process which varies according to the cotton and the use to which it is to be put. For instance, it may be singed to remove the outstanding parts, then raised, cut, brushed and steamed, and it may be decided to load the fabric with starch. This gives added weight to the cloth and a better finish. There are also other methods to which the cloth may be subjected.

Cotton is frequently dyed in the piece after being woven grey, or printed with designs of many colours.

There is probably no better illustration of the relationship between the rise of an industry and the natural conditions of a region than is supplied by the Lancashire cotton industry. The woollen industry of the Pennines is today restricted to their eastern slopes, but at one time the western Pennines also manufactured woollens, the industry being based on local wool supplies, the humid atmosphere which facilitated spinning, and the plentiful supply of fresh water from the mountain streams to aid the washing of the wool. The necessity of a damp climate to keep the thread from becoming brittle during the spinning process is even more important to the cotton industry than to the woollen industry, hence the choice of the damper western side of the Pennines for cotton.

When, at the end of the 17th century, Flemish refugees introduced the manufacture of cotton into Lancashire, Manchester had the advantage of being a non-corporate town, *i.e.* it admitted foreigners whereas many other towns did not. Thus it attracted the refugees and their industry to itself.

The mountain streams were as useful for their power to the cotton industry as they had been to the woollen industry, and the soft lime-free water facilitated the washing of the cotton, and, later on, its bleaching and dyeing.

These, then, were the original factors which led to the rise of the industry in Lancashire, but subsequent factors also emphasized the importance of the area. With the introduc-





Dorrien Leigh



Dorrien Leigh

(Opposite) When the bales of cotton reach the spinners, they are loosened, mixed according to the type of cotton required and passed to the spinning machine. (Above) Old and new in spinning. A Yugo-Slav peasant spinning cotton by the old hand method; one thread at a time is laboriously spun. Modern machine spinning produces hundreds of threads simultaneously

tion of steam power large supplies of coal were close at hand, while the presence of iron ore supplied the necessary machinery. Again, when bleaching and dyeing were introduced, the Cheshire saltfield was near at hand to provide the chemicals. Add to all these the easy import of raw cotton and export of finished goods through the magnificent port of Liverpool, and subsequently Manchester, and also the facilities for inland transport provided along the Lancashire Plain, and we begin to see the great factors which worked together to form a favourable setting for the cotton industry.

Even the geological structure helped the industry. The clay soils of Lancashire retain moisture and thus tend to keep the lower layers of the air moist even during long dry spells, while the basic rock (Millstone Grit)

provides an abundant source of sandstone for building purposes.

There is one final factor which must be mentioned, and that is the Lancashire folk themselves. The various branches of cotton manufacture call for a high degree of skill, and the hereditary skill of the Lancashire cotton operatives dates back to the days of the flax and wool spinning cottage industry. During the past few years when Lancashire has met with increased competition in world markets, it is inherent skill alone which has enabled her to produce a better-quality article than her competitors and thereby retain her better-class markets.

The other centre of the British cotton industry, which has largely died out today, was centred in Scotland on the Lanarkshire coalfield, and the factors which favoured its

growth in this area were the humid atmosphere, the presence of power and labour, and the easy import of the raw cotton—Glasgow being even nearer the U.S.A. cotton area than Liverpool.

What, then, led to the decline of the area? Its rise may almost be said to be the cause of its downfall, for the iron and steel industry of the region grew up because of the cotton industry. But once the iron and steel industry was established, the factors favouring it were greater than those favouring the cotton industry, and this led to specialization at the expense of cotton. The only centres of any importance now are Glasgow and Paisley, the latter largely producing sewing threads.

To return to Lancashire. The geographical setting of the cotton industry is dominated by the Rossendale Fells, and this leads to a major division of the industry. To the south of the Fells there is a heavier precipitation and a more humid atmosphere than in the rain-shadow area to the north. As cotton-spinning requires a damper climate than weaving, owing to the brittleness of the fibres when dry, spinning takes place in the area to the south of the Fells, while weaving extends throughout but is more important in the north.

The Fells themselves are of porous sandstone overlying clay, and this gives rise to numerous springs, so that we find cotton-finishing being carried on round the edges of, and actually on, the Fells.

The separation of the area into a spinning and a weaving region has economic as well as climatic reasons. The organization of the spinning industry is essentially different from that of weaving. Spinning deals with a smaller range of products, and is therefore able to manufacture on a more stable and larger scale. Moreover specialization is favoured by the wide range of yarns and fabrics, and few firms could undertake the manufacture of all types without becoming unwieldy.

Unfortunately, and here is the great drawback to the Lancashire industry, the separation and specialization of the industry has led to disintegration. There are six main types of firm, viz. the merchants and brokers who handle the import of the raw cotton, the spinners, the yarn merchants, the manufacturers, the dyers and finishers, and the piece-goods merchants. These various firms are distributed throughout Lancashire, and we may give an illustration of the movement of one particular consignment, based on fact. The raw cotton was imported to Manchester

where it was sold at the Exchange. It was sent north to Bolton for spinning, then to Manchester again for the yarn merchant. From here it was sent north to Preston for weaving, passing on its way, it should be noted, through Bolton. After being woven at Preston it was examined by the manufacturer's cloth-looker, then sent to the warehouse in Manchester where it was once more examined by a cloth-looker belonging to another firm. The cloth was then sent to Oldham to be dyed, and returned finally to Manchester to be made up. In many cases, however, on its last return to Manchester it would pass into the hands of the piece-goods merchants.

From this can be seen the expense of transport owing to decentralization. In addition, each of the six types of firm has to show a profit on the goods. Small wonder, then, that Lancashire is finding it difficult to keep up with her competitors who do not suffer from this disadvantage, and that today she is restricted to the higher-priced markets.

(Opposite) *A warping machine which runs hundreds of parallel threads on a beam (seen in right background), thus forming a warp. The warp is then sized and put into the loom for weaving. (Below) The Lancashire Cotton Area. The predominance of the Rossendale Forest upland region should be noted*



Stanford, London



Dorion Leigh





Sunlight on Malta

Notes and Photographs
by Barbara Power

Now that the heroic island of Malta has weathered the storm to which it was exposed for two years, between Italy's entry into the war and the British victory in Libya, it is with pleasure enhanced by pride and relief that one turns to contemplate again the beauty that nature and history have given it, which can still be found in spite of the many scars inflicted by concentrated bombing.

My first picture shows one of the many village churches in which Malta is so rich; for the Maltese are an intensely religious people. A few of these churches date from the time of the Knights of St John, others were built more recently, sometimes by villagers with their own hands. The soft limestone, quarried from the site of the building, can be cut with an ordinary saw or hewn with an axe. It is very durable, this stone, and has survived centuries. It withstood Turkish guns during the siege of Malta in 1565—in too many cases only to fall victim to Axis bombs. In peace-time at certain hours, on Sundays and feast days, the air vibrates with the sound of bells, from village and town, across the harbours and creeks



Well laid-out public gardens abound in Valletta and its suburb, Floriana, on the bastions overlooking the Grand Harbour and surrounding the Governor's palaces of San Antonio and Boschetto. Palms and pepper trees shade walks between beds of brilliant cinerarias and tall arums. The walls flame with bougainvillea and the air is sweet with the scent of stocks and orange blossom. Every house has flowers, sometimes no more than a cascade of pink geraniums falling from a wrought iron balcony. The warm climate allows familiar English flowers to grow side by side with tropical plants. Here tulips and freesias are seen growing together in the old garden of a private house



Fishermen at work mending their nets. The painted boats (dghaisias) provide touches of brilliant colour, which is reflected in the still waters of the creeks that intersect the suburbs surrounding the Grand Harbour

A Maltese housewife bargains with the man who brings his vegetable cart to her door. Laden with the produce of Malta and her sister island, Gozo, these carts come daily from the country trading their wares from house to house. The soil of Malta, though rocky and shallow, is very fertile and the farmers cultivate every inch of their terraced fields. Fruit and vegetables grow in abundance. A pleasant local wine is produced from vines grown among the rocks. The vegetable carts are gaily painted and the horses well tended. Many Maltese own light 'flat carts' and well-bred ponies, which they race on holidays and feast days







Photochrom

(Opposite) *All that remains of the law courts in Valletta, one of the many buildings of local and historical interest now in ruins. In front of it stands a carrozzia: always common in the streets of Malta, they now entirely replace the cars of pre-war days. (Above) Valletta and part of the Grand Harbour, seen from Sliema. In the foreground are some of the terraced gardens which produce Malta's abundance of fruit and vegetables. (Right) Women of the island of Gozo making the lace for which the islands are famous*



Paul Popper

The Wilderness of Judah

by HENRY C. BREWSTER

BETWEEN the fertile coastland of Palestine and the great depression of the Jordan and the Dead Sea is a desolate stretch of rugged, waterless country, known as the Wilderness of Judah since the days when the children of Israel came up into the promised land from the plains of Moab.

In the course of time much has altered in the face of Palestine and Trans-Jordania; the Phœnician and Greek towns of the coast have vanished, and close to Jaffa, the ancient Joppa, the modern Tel-Aviv has arisen. The Roman cities, only if specially favoured by fortune as Gerasa has been, are represented by monumental ruins; and even old Jerusalem, unspoilt and untouched as it is within its Turkish walls, is not the Jerusalem of the ancient Israelites; upon the site of the Temple stands today a stupendous group of buildings to the glory of Allah and his Prophet; and outside the old town the drab luxuries and comforts of a new world straggle in every direction.

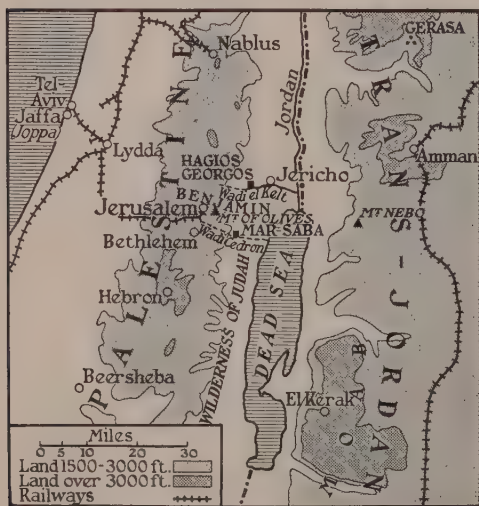
Large tracts of fertile land have dried up and become barren through neglect, depopulation, wars, raids, deforestation and erosion; while within recent years long stretches of coast have been reclaimed by enthusiastic Zionists and turned into luxuriant orange groves. But nothing has changed the Wilderness of Judah, which remains, as it always was, a mountainous, stony desert.

When Moses "went up from the plains of Moab into the mountains of Nebo", and, looking over the Dead Sea and the valley of the Jordan, was shown by Jehovah the promised "land flowing with milk and honey", surely he must have been disappointed unless his attention was directed mainly on "Jericho, the city of palm trees"—those palms which in later years were always coveted and often possessed by greedy despots such as Herod and Cleopatra; for everything else was then, as it is now, a magnificent desolation extending westward as far as the uplands of Judea and Benjamin.

Today, as probably always in the past, the Wilderness comes practically up to the walls of Jerusalem. From the gentle ridge of the Mount of Olives you can see it, almost from your very feet, sweeping away to the east in all its Asiatic grandeur. Intersecting its smooth, velvety surface, deep gorges run down, from west to east, into the valley of the Jordan and the Dead Sea. These gorges which break up the smoothness of a rolling desert are flanked by walls of red rock several hundred feet high, and so narrow is the gap between them that looking down from the hills of Jerusalem and Bethlehem you hardly guess their existence. In the winter when the rains fall these 'wadis', as they are called by the Arabs, become roaring torrents, while up above the waves of the Wilderness get covered with thin grass, thus offering a meagre pasture to the goats and camels of the Beduin. But during the rest of the year water is precious and the grass gets burnt away by the sun into sparse threads of gold, showing the earth almost naked.

Robbers and tribal raiders have found this desolate region ideal for ambushing and murdering helpless travellers on their way to Jericho and Trans-Jordan; and the deep winding gorges and caves in the rocks have proved perfect hiding-places for outlaws. Until quite recently, when the truce between Arabs and Jews put a temporary stop to disturbances, the road between Jerusalem and Jericho, pent in as it is between cliffs and escarpments, was as unsafe as in the days of the Good Samaritan.

Not only robbers, however, have dwelt and carried on their activities in the Wilderness; from time immemorial prophets, anchorites and monks, such as Elijah, John the Baptist and St Jerome, have felt its fascination and



Stanford, London





Henry C. Brewster

The Monastery of Hagios Georgos, seen from the opposite side of the gorge

have withdrawn into its solitude for prayer and penance.

When in the 4th, 5th and 6th centuries of our era monasticism grew from the organized zeal of ascetics, penetrating to the most inaccessible corners of the Middle East, Palestine showed herself no less ardent than Egypt in religious enthusiasm and the Wilderness of Judah became the Thebaid of the Holy Land. The deserts became peopled. Thousands of monks flocked to the most awe-inspiring and desolate parts of the country; some of them led the lives of hermits, honeycombing the cliffs of solitary gorges with their primitive

and almost unreachable dwellings; while others, the so-called 'coenobites', grouped themselves together in communities and built the first monasteries of Christendom.

Right across the Wilderness, from north to south, as far as Sinai and the monastery of St Catherine, ran an almost uninterrupted line of buildings erected by the early Christian ascetics who preferred the life of the desert to the comforts of a restless world. But despite the efforts of their founders, few of these monasteries have stood the test of time.

Early in the 7th century, when the security which the Middle East had enjoyed for so

long as part of the Roman Empire was being threatened again by the looming aspirations of hostile peoples further east, the peace of these monasteries was shaken by the devastating invasion of the Sassanian Persians.

These traditional enemies of the Romans invaded Palestine and Egypt, putting to the sword many more Christians than did ever the Arabs, who shortly after wrested these provinces from the Eastern Empire and from their close connection with Europe for good and all. The Islamic occupation of Palestine, although considerably less ferocious than the rapid and fleeting Persian invasion, sapped the very life of eastern monasticism and in the long run proved far more destructive than the wholesale slaughter of monks, which like a hurricane had swiftly come and gone, allowing new recruits to fill in the gaps left by the martyred victims.

In the Wilderness of Judah not many of the early Christian monasteries have survived the vicissitudes of history. The chain of holy buildings has been swept away, and Hagios Georgos and Mar Saba are among the very few that can be deemed worthy, as far as natural situation and architecture are concerned, of belonging to the great monastic era of the East. From Jerusalem the more accessible of the two is Hagios Georgos, situated, or rather concealed, in the Wadi el Kelt—one of these characteristic gorges of the Wilderness—at a point about twenty miles east of the Holy City, not far from the old road to Jericho. By car you can reach almost the ridge of the gorge overlooking the monastery in less than an hour, but within that short spell of time you have left behind you nearly everything connected with modern civilization and you find yourself at a place which has always been a favourite haunt of robbers, a place surrounded by the solitude of the Wilderness, looking much as it was in the days of St John the Baptist.

Hagios Georgos is so well hidden in the cliffs of the wadi that it is not easy to catch sight of its walls even from the edge of the gorge. A small path hewn out of the rock winds down to the bottom of the ravine along which a stream rushes by in a trough from one of the few perennial springs of the upper regions of the Wilderness; flowing eventually into the valley of the Jordan, it waters the palm trees of Jericho.

The presence of water has attracted tufts of rich vegetation, and the softness and freshness of olive, orange and palm trees offer a delightful contrast to the austere majesty of the burning red cliffs. The monastery that faces you on the other side of the gorge, spanned by a

small stone bridge, is to a great extent carved out of the rock, so that most of its cells and half of the Byzantine church are placed well within the cliff which, acting as natural walls, adds much to the solidity of the construction. But even so the monastery has suffered, especially the front, from fires and raids, and has been rebuilt several times. The rooms inside the cliff, however, and the church bear the stamp of great antiquity.

According to tradition it was here, where Hagios Georgos still clings to the mighty walls of the Wadi el Kelt, that Elijah was fed by the ravens. The character of the entire neighbourhood is certainly in keeping with the spirit of asceticism. The cliffs are honey-combed with caves, once the holy dwellings of hermits and anchorites. In one of these dark hollows the traveller is shown hundreds of skulls neatly laid out in semicircular rows. This macabre display of human remains, however, fits in with the surroundings and attests the harrowing story told in connection with them. When Chosroes II invaded Palestine thousands of monks and nuns from neighbouring hermitages and monasteries fled before the terror of the Persian army and flocked to the stronghold of Hagios Georgos, hoping to find there some degree of safety. But the monastery was taken by storm and they were massacred. Their remains were gathered and preserved with veneration by the monks and hermits who afterwards came to repeople the holy gorge. The fanaticism of the Persians, who are supposed to have slaughtered ninety thousand Christians in Palestine alone, with the aid and active participation of the delighted Jews and Arabs, by whom the invaders were received as deliverers, is to this day remembered with awe in the Wilderness of Judah after centuries of Islamic subjection.

In the course of centuries the fortunes of Hagios Georgos have suffered all kinds of vicissitudes. Before 1914 a period of prosperity was enjoyed during which the community received generous subsidies from the Russian Church for the upkeep of the monastery; and for a time it was undoubtedly kept in good repair, and the old and crumbling walls were rebuilt or strengthened. But when during the last war fighting broke out again in Palestine, Turkish troops attacked and pillaged the holy buildings of St George. The doors were torn down and burnt, the windows smashed and the furniture and sacred vestments stolen; and up to this day nothing has been repaired or replaced, for the Russian subsidies are no longer forthcoming. One solitary monk lives within these massive walls and bewails the passing of those days when

the monastery was still pulsating with life. It is not the first time, however, that the fortunes of Hagios Georgos have sunk to a low ebb; the tide may yet turn, for a life of solitude and prayer will always have its appeal.

Hidden away in the Wilderness, well off the beaten track and more difficult to get at, is the monastery of St Saba, or Mar Saba as it is called by the Arabs, which architecturally is even more interesting and remarkable than Hagios Georgos. It was founded by the 5th-century saint whose name it still bears.

One morning in the burning and cloudless month of July I set out from Jerusalem with a few friends, hoping to reach Mar Saba early in the afternoon so as to see the old monastery and its surroundings bathed in the golden evening sun. A ride of five hours into the wildest and loneliest part of the desert between Jerusalem and the Dead Sea had the attraction of offering to the mind, steeped in the cares of every day, an exhilarating contrast with the European life of Jerusalem, then bustling with war activity.

Our donkeys were frisky and somewhat unmanageable, partly owing to difference of sex and partly, I presume, to their natural Arab liveliness. They had an awkward habit of lifting their hind legs all of a sudden and kicking away furiously at each other, often on the edge of precipices, while we hung on desperately to whatever we could grab. The soft rolling scenery, however, shimmering with light, and the black tents of occasional Beduin encampments, surrounded by their

camels wandering and grazing on the meagre remains of grass, had an absorbing fascination which soon made us forget the unpleasantness of such experiences and seemed to mitigate the sharpness of the sun which came piercing down upon us with all its might.

Instead of following the bottom of the Cedron gorge, which is perhaps a shorter route, we skirted the crests of the hills that sink away to the east. The air is supposed to be healthier up here, for in spite of the blazing sun it is occasionally stirred by a breeze. Little by little, as we descended towards the great depression of the Dead Sea, with the mountains of Moab rising lofty beyond in the mist of noon, the air became heavier and the scenery more desolate until all trace of life vanished from the surface of the earth.

After a toilsome, joggy ride of several hours the line of hills we followed suddenly swooped down to form a vast circular hollow, cut through the middle by the slit of an abysmal ravine. From the heights commanding the declivity of the dip the walls of the fortified monastery of Mar Saba are scarcely visible, for the whole mass of construction is well within the ravine, clinging to its western side. Only the two watch-towers that flank the entrance peer out over the edge of the wadi.

When at last we arrived weary and thirsty, hoping to meet with a hearty welcome, we found the gates shut and barred, for even in our time the desert is full of unexpected dangers and fortified dwellings still turn to

The Wadi el Kelt, showing the situation of the monastery of Hagios Georgos

Henry C. Brewster



The monastery of Mar Saba clings to the rocky side of the Cedron Gorge

Henry C. Brewster



the outer world with distrust. After a bell had rung for some minutes, an old monk peeped through a hole in the great door and roughly asked us who we were and what we wanted; no hospitality, he declared, was ever granted to persons who failed to bear a letter of introduction from the Greek Orthodox Patriarch of Jerusalem. I had no letter, but realizing that this hostile attitude was mainly due to suspicion and to an anti-Jewish prejudice which, as I had noticed more than once in Palestine, existed among the Orthodox clergy as much as among the Moslems, I hastened to explain to the old monk in my best Greek that we were Christians and English, and that we had been living in Greece. This led to a friendly chat about his home in Greece, a topic which seemed to mollify him, for presently we were let in and received with open arms.

Mar Saba, like most of the early Christian monasteries of the East, belongs to the Greek Orthodox rite and its community consists of Greeks from Greece and of Greek-speaking monks from the Levant. At the present day they number scarcely more than thirty, although in the past there were times when several hundred inmates lived within the holy walls. But even now Mar Saba presents a certain degree of prosperity, and everything is kept in a relatively good state of repair; and by no means all the members of the monastic community are old and decrepit, for the monastery is used as a penitentiary for monks who have misbehaved themselves.

Thin grass on the Wilderness of Judah offers a meagre pasture for sheep and goats

Henry C. Brewster



Mar Saba is undoubtedly cut off from the world and, as far as I could gather from the more talkative ones, not all the inmates seem to enjoy its life of seclusion and fasting. When I ventured to express to the young monk who acted as our host all my appreciation and admiration not only for the stupendous group of buildings they inhabited but for the existence they led, away from the cares and worries of western civilization and from the clashes of blood-thirsty wars, he retorted with surprise if not resentment: "But Kyrie, this is a living death in an open tomb. Look at the walls that hold us within their grasp." I looked up, and indeed the height of the cliffs was imposing and the air close, breathless and overwhelmingly hot. The sides of the gorge were dotted with hundreds of caves and hermitages at one time peopled by ardent anchorites. Evidently our young friend had not yet imbibed the true spirit of asceticism. He was eager to talk and hear from us news of the war. Many of his fellow monks, however, hardly noticed our presence and passed by engrossed in meditation or in the particular task assigned to them.

Mar Saba has always been a fortified monastery and up to this day it still offers protection against hostile tribes to the friendly Beduin shepherds of the district whose livelihood and existence are largely dependent on the benevolence of the monks.

Seen from the opposite side of the gorge the monastery stands facing you in all its pristine glory, a stupendous conglomeration of architecture mingling with rocky barrenness. In the centre is situated the Byzantine church with its flying buttresses. In front of it is a courtyard and a chapel; over to the left are placed the guest-house, the various annexes belonging to it and a series of rooms and small chapels cut out of the rock, while on the opposite side are arranged, in consecutive rows and superimposed terraces, kitchen gardens, narrow alleys, flights of steps and all kinds of buildings containing refectory, kitchen, bakery, dispensary, store-rooms and the private cells and apartments of the cenobites. The whole is surrounded by crenellated walls and sturdy towers built from the stone of the cliffs and growing out of the rock as if indivisible from it and forming with it, in the light of the setting sun, one uniform golden mass that stands out in contrast to the dark shadows of recesses.

The impression left upon the mind is one of great simplicity and splendour which, during the slow and fatiguing ride back to the uplands of Judea, accompanied me in the shape of a comforting and bracing vision.

Gateways of the South Atlantic

by ALEX COMFORT

OCEANS have an identity and a uniformity of colour and substance no less than land—a sailor would no more mistake a part of the South Atlantic with its profound greenness, smooth like oilcloth and evenly spaced in ridges like corrugated iron, for the grey and white spiky water of the North Atlantic or for the vague shimmer of the Gulf of Aden than a landsman would confuse Norway with Cambridgeshire. And the transition is sudden, not gradual as one might expect. The South Atlantic has gateways where the character of the water changes within an hour of steaming. Scattered round its north frontier is the ring of islands and coaling ports, and its southern boundary lies not at Cape Horn and Delagoa but along a line from Cape Frio to half-way down the coastline between the Bight of Benin and the Cape. At Frio in the south the green ridges of water change to a cloudy blue, bottle-coloured nearer the shore, where the albatross is first met with on the voyage south. Round Frio there is nearly always a small clot of mist and bad weather, a miniature Biscay, and below that one gets the dry wind of the South American plain and occasionally, in the season, prodigious local tornadoes lasting up to an hour and frequently carrying off funnels or masts.

The southern border is not so impressive on the northward trip, as one is only just out of the mud around the Plate estuary, where the water is tea-coloured. But going southwards from the channel the gateways are impressive because palpable.

I recall coming into Funchal Bay, in Madeira—the northernmost gatepost, if one discounts the Azores, which I know only as a flock of low-down slate clouds along a skyline—on a Sunday morning very early. The mist going up did not show the island until we were close, and then our bow wave touched it, going out across rolls of water level and marked with a continuous green netting pattern. It had walls running up to unknown heights in mist, dotted with white patches which might have been snow

or flowers but were houses.

Cabo Girao goes up quietly into mist, a 1900-foot billiard table, ledgeless, rather dwarfed by the mountain and the vapour, with small white flecks of water running up its discoloured base. Under the mist line the valleys come down to small beaches with weed and a few rocking boats, lying between high corridors of cliff or on small yellow streaks of sand.

The point before Funchal has a crop of feathery trees and a hulk moored off it. The town trickles down like a white viscous fluid, a glacier, out of the mist across a number of mountain spurs, among a thick vegetable fur, which in the early morning is grey, but when the sun is up dazzles with green and huge domes of flowers.

The water even so early was blue, as if a bucketful would keep the colour, and one could see the sand. Here, more than at any of the other gates, the landfall is a smell not a sight, an odour of plants as typical as the smell of the sea when one has crossed a continent. On this morning the President's yacht lay among the bumboats, very neat, and a small cruiser was loading fish-boxes onto the after deck.

We were due to coal before dark, and everyone was impatient because the doctor and the customs had not come to claim their bribes, which we had ready to lower on a string. They were on their way when a bugle blew on the warship, and twenty-one shotted rounds were suddenly fired over our heads, out to sea, followed by another twenty-one from the fort. Some rockets went up ashore, and then, at the signal, rifle and machine-gun fire began to flash up in the wooded ravines. The windows of the hotels shot up, and Sunday began. Nobody in the town cared a damn for the fighting overhead. There was a revolution going on about the price of milk, but the tug *Falcão* and her crew of Robinson Crusoe stevedores were undeterred and spent much of the day trying to burgle our cabins, while we ashore drank

lager at the bathing-pool and tried to sink into the blue mirror of tree-reflections off the point, watching our ship's hull get lower as she coaled, her siren calling off new barges every now and then. The gatekeepers were still fighting when we sailed.

We were shadowed for some time by a ship-load of "schoolmarms, proper old battle-axes" as the skipper described them, but shaking them off, we went on to the inner portal. Beyond Madeira the sea is still blue and choppy like the bay. The South Atlantic does not begin yet, but the water is luminous at night.

The gateway—and it is truly a gateway—comes up slowly as a dense smoky blur on the skyline ahead, divided into two clouds, with mist between. Then the Cape Verde Islands appear very gradually, San Vicente to port, San Antao to starboard, so utterly different

from the banana commercialism of Madeira with its rope railways and bullocks. The sea round them is a poisonous shade of green, but everything else is red or brown, its colour pulsing like the colour in a coal.

San Vicente is a low, straggling mass of teeth, fags, stumps and peaks, sprawling like the nodular top of a biscuit, red and terracotta-coloured, with yellow veins and streaks in it, cut out of painted stiff canvas. This low petrified swell of rock runs far eastwards, ending in long crusts and spits of sand floating in the water and rocking with it, with a tall cone like an extinguisher as their final eastward period.

In the elbow of the strait is a black mass of rock, white on top, with a minute white pinpoint which might be a bird sitting on the side. This is the lighthouse. Beyond is a row of barrack-like buildings ashore, a gas-

F. J. Mortimer



works and a fluctuating strip of sand, with four palms, tall, dusty ones, the only vegetation on the island. But on the other side of the strait San Antao stands, an enormous erect mass of red rock, its bottom surrounded by drifts of spray like steam, its sides black and red and mottled with sulphur, and falling in cascades of irregular blocks.

I remember vividly a gull which crossed one of the folds of the cliff, a suspended planing white dot, traversing a crack which would have contained our tramp. There are enormous valleys of hot rock, with unscalable sides, and their ends choked with stones as big as houses, running up to meet receding faces and curtains of rock far inland. To walk in them would be to know how an ant feels traversing a basin of lump sugar.

Down the strait one meets other traffic coming and going, its code set for the Bird Rock signal station, and one looks for the red and yellow flags of the repeat hanging over the castellated wall of the station. It is hard not to look apprehensively into the middle of the rocks when a vista opens and expect to see columns of rock or red-hot stones shooting noiselessly skywards. It is a silent place, but one feels it to be the deafening silence which surrounds a locomotive blowing off steam—a silence of too much noise, not too little.

On San Vicente, after the town is passed, one sees a series of bitten-out rock amphitheatres, with smooth sides, sloping up to vanish inland. Behind the massif of San Antao are pillars and screes coming down to a low irregular plain filled with vast blocks which have fallen.

Rain blows up the straits but never falls on the islands. By this time the ridge topping San Antao is usually of an unutterable blue with red fire under it. And here one meets the South Atlantic, as one steams out of the strait and encounters a line of regular green head-and-stern rollers, not crested, with even troughs twenty feet deep, like magnified rings from a dropped stone in a pool. They accompany one, with soft cotton clouds whose tops appear first over the horizon, as far as Cape Frio.

Of the other gates, there is Dakar on its green low hills, with its very white buildings and endless yellow beach, and Goree Island just beyond, covered with tall houses like the

back streets of Cadiz or Marseilles. It reminds one a little of a piece broken off the residential part of Bath. Ashore there are mimosas and gigantic butterflies and wasps, with proportionately minute finches, and the houses are short and white, with glassless, very French shops.

In the south, Fernando Noronha with its preposterous pinnacle of rock, which may fall at any moment, steams like a Turkish bath, full of Brazilian convicts. Saint Paul's Rock, which very few people see, is a low clump of stones, the top of a cairn, whitened with droppings and under a continual cloud of whirling birds, cape pigeon and mollyhock chiefly. There are some mysterious outposts, too, which ships have sighted but never rediscovered, clumps of bird-covered rocks or breakers, or single black pinnacles just avoided in fog. But I have never seen them.

The South Atlantic is vast although it conceals its vastness inside its horizon, as a cinema film conceals its length, and one does not see all of it at once. But beyond Fernando Noronha one is only a day's steaming from the green hills and reddish cliffs of Brazil, with palms jostling one another over the edges.

But the most striking gateway is that of the Hesperides. I was called up to see it at four in the morning, knowing it till then only as a distant arrow of pink sugar standing above a cloud-bank fifty miles away. There was a low cloud over this strait, and I could just see beaches on each side of us. Then the sun came over the saw-edge of Gran Canaria, and the mist began to roll down the sides of the other island in long trails like beads of sweat. Suddenly the cone appeared, delicate pink and ribbed like a parasol, with clouds crossing it, the Head of Atlas. Down below the mist was pouring stickily through trees whose blossoms I could smell. It flowed into the sea and vanished, leaving a tall trail of smoke going up for breakfast from Sta Cruz de Tenerife.

One of these days I am going up that peak. When this war is over and one can go back to the South Atlantic it will be by way of the Canaries—not seen from large decks as most people see them, but from low down, close to lively water—that I shall try to go. It is a good thing to begin again at the point where one left off.

Air Power and Geography

by SIR EDWARD L. ELLINGTON, G.C.B., C.M.G., C.B.E.

As a sequel to the series of articles we recently published on Sea Power we now present a statement of the case for Air Power by a Marshal of the Royal Air Force who shows the conditions and materials on which its successful development depends, particularly in relation to the geography of the British Empire

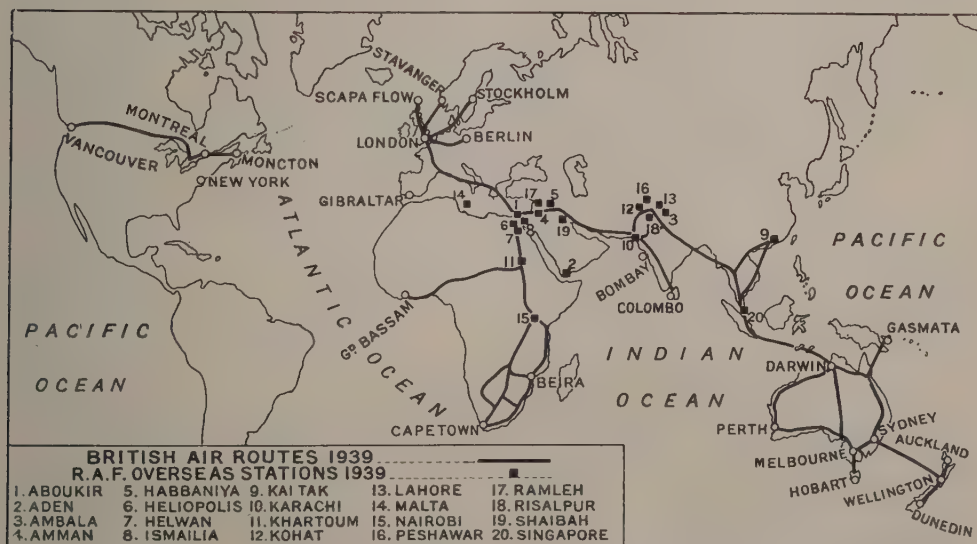
FORTY years ago the first aeroplane was flown by the Wright brothers at Kittyhawk in America. It was not long before the uses of this invention attracted the attention of those whose profession it was to study war. For the first time since warfare at sea began a fundamental revolution in warfare had taken place: operations could in future be carried out in all three dimensions.

Since there are only three dimensions so great a revolution can never take place again. This is a matter of the greatest importance for the defence of any country, for the power which first evolves a sound three-dimensional strategy will lead the world in warfare, and with adequate forces should be unassailable. To the British Empire, with its widely separated parts and its strategic centre on a small island hitherto held together by sea power, it is of greater moment than probably to any other power.

An aeroplane can not only work in a great

number of layers of the atmosphere above the surface of the globe, but, since its movement is not restricted to one part of the earth's surface, as is that of ships to the sea, and is not affected by accidents of the ground, such as mountains, rivers and deserts, as are armies, it is free to move where it will. Nor can it be stopped by obstacles such as fortifications and minefields, and there is no effective passive defence against its attack by which time can be gained for reserves to be moved to a threatened point or dispositions to be modified to meet an assault which is developing.

There is no analogy between defence against aircraft and defence against an army by means of outposts or advanced guards with supports and strategically placed reserves, and defence afforded by cruisers and destroyers screening a battle fleet. The only defence is counter-attack by other aircraft: either the tactical counter attack of fighters or the strategical counter-attack of bombers.



Stanford, London

Since the object of all commanders in war is to break the enemy's will to continue resistance by depriving him of the means of doing so, it may be that the attack of the bomber, if carried out in sufficient strength, by acting directly against the centre of the enemy's power will alone prove decisive. Hitherto the destruction of the enemy's armies, interposed between the centre of power and the attacking forces, sometimes supplemented by starvation through blockade, has brought wars to an end. But there is as yet no historical data from which it can rightly be judged how far an air force alone can force a decision.

What are the requisites for the development of air power? First, adequate resources of suitable man-power to be trained as crews or for maintenance duties. Secondly, large engineering resources and supplies of raw material which can safely be made available are necessary so that an air force can be equipped. Thirdly, since defence against aircraft requires room for the interception of the attacking forces before they reach their targets and for the dispersion of resources in order to minimize the damage caused by those of the attackers which penetrate the defences, a great extent of territory is wanted. Provided this territory contains all the resources necessary, the more compact it is the better.

MAN-POWER

Now British sea power, on which the safety of our Empire has hitherto depended, is a result of the geographical position of the United Kingdom which has caused a large proportion of its people to depend on the sea for a livelihood. Since the discovery of the New World the Englishman has spread all over the globe in search of trade and profit and in so doing has developed a great mercantile marine and also those qualities which make good seamen. So that when a navy was required to protect our commerce, human material and technical experience second to none were available to make and man a fleet. Furthermore, our climate, with its open weather throughout the year, and the innumerable harbours and inlets of this land, has bred a race inured to the sea from childhood.

Quite other has been the history of our air power. War followed on the invention of the aeroplane so soon that its commercial uses could not be exploited before the forcing-house of war fostered its military qualities at the expense of its civil qualities, and turned the thoughts and actions of the young men of the United Kingdom and of all Europe to

the air in a way which would not have happened in a hundred years of peace. For the natural growth of a widespread aptitude for flying in a people, the conditions of their normal life must supply the urge to fly. The most valuable characteristic of the aeroplane is its speed; its speed through the air supplemented by its power to fly 'in a bee line' between two points, and the greater the distance a man wants to go the more valuable is this quality. Consequently a small country with a long-established civilization and a fully-developed road and railway system is less likely to breed a race of airmen than a new country of wide extent. For this reason it is to be expected that air power will develop more readily in the big, less densely populated, or less fully developed, countries than among the older and more congested territories such as those of the European nations. Fortunately for our Empire it contains countries where all favourable conditions exist, and it is no accident that the men from the widespread Dominions have contributed a greater proportion of our airmen than of our seamen or soldiers. The Empire Training Scheme in Canada is evidence of this.

ENGINEERING RESOURCES AND RAW MATERIALS

As for the second requisite any industrial country with good sources of power and access to the necessary raw materials, the principal of which are, at present, aluminium and high-grade steel, can develop an aircraft industry, and the men in the engineering industry will supply skilled mechanics for maintenance work. Although the motor-car industry, because it makes use of the light internal combustion engine, is particularly suitable as the basis of aircraft manufacture, any engineering factory can be easily adapted for making aircraft. The cabinet-making industry, too, has its contribution to make in the provision of training machines and such special aeroplanes as the Mosquito.

WIDE TERRITORY

Adequate space is most important. The principal protective weapon against air attack is the fighter aeroplane, and at the present stage of development the single-engined, single-seater fighter dominates the battlefield and has proved itself more than a match for any other type. This superiority arises from ease of manoeuvre which enables fixed guns to be used, and a greater number of fixed guns can be used, or fixed guns of a larger calibre can more easily be installed, than movable guns such as are required by



By courtesy of the Canadian Government

Canada, with its wide spaces out of the enemy's reach, is an ideal country for all but the final stages of training: the Harvard (above), an American aeroplane modified to suit R.A.F. requirements, has proved a most successful trainer. (Below) Ship-borne aircraft are now part of the Royal Navy. Most of them operate from Carriers. The biplane with its greater wing surface and lighter wing loading has survived longer in the Navy than on shore on account of easier landing

Topical Press





By courtesy of the British Overseas Airways Corporation

the less manœuvrable and heavier types of aircraft. But in order to preserve its manœuvrability, the single-seater fighter must be kept light, and a heavy weight of fuel cannot be carried. In consequence its range is short and it must normally be kept on the ground until attacking aircraft are known to be approaching.

In order to get notice of their approach a warning area is necessary, and the higher the speed of the approaching aircraft the greater should be the warning area. Radiolocation no doubt has done much to reduce the disadvantage of a small warning area, but it is not infallible, and if the attacking aircraft can start from bases only a short distance from their enemy's country, the warning given by radiolocation is all too short, as is evident on the South Coast of England today. Since the enemy can approach at any height from sea level to 40,000 feet, no defence, however great its scale, can intercept all enemy aircraft before they reach their targets.

In order to minimize the effects of the bombs of those aircraft which penetrate the defence, wide dispersion of aerodromes, factories and depots of reserves and stores is necessary, or they must be withdrawn beyond the easy range of the enemy's air forces. Further, the training and the supply organizations necessary to maintain the operating squadrons up to strength is large; probably three or four training or storage aerodromes are required for every operating one, and as no two landing grounds can be very close, lest the aircraft using one interfere with those using another, and since much country is not suitable for the making of landing grounds, a wide extent of territory is necessary for the development of an air force.

From this it will be seen that great countries like Russia and the United States of America are best suited for the natural growth of air power. The British Empire with its widely separated parts provides many alternative areas for dispersal, and especially are the conditions in Canada and Australia suitable. But the communications between each part, and above all those with the United Kingdom, where at present are situated the main industrial resources and the centre of political power, must be made secure.

The route to India used by British Overseas Airways before the war ran along the Arabian side of the Persian Gulf and across the Oman Peninsula. This was substituted some fifteen years ago for the earlier route along the Persian Gulf

This leads me to oversea communications and the effect of air power on their security. Before the advent of air power a centrally controlled navy secured such communications for all those powers the component parts of which were held together by keeping the sea ways open for merchant shipping. This protection was given by light craft, while fleets of heavy ships were strategically placed so that support could be given to the light forces if the enemy attempted to prevent them from carrying out their work. Since navies only move in two dimensions, a central position could usually be found from which an enemy fleet could be brought to battle, if it attempted to interfere with the forces protecting the merchant shipping.

The position of the Grand Fleet at Scapa Flow in the war of 1914-18 is an example of this. But the sinking of the *Prince of Wales* and *Repulse* off Malaya, and the battles in the Pacific, have shown that without air superiority even capital ships cannot operate within reach of the enemy's aircraft without serious risk.

But the restriction put on the aircraft designer by the conditions in which aeroplanes in carriers are used (such as limit in dimensions, ability to land and come to rest within the limits of the landing deck), result in carrier-borne aircraft being somewhat inferior to their land-based contemporaries, and the carriers themselves are very vulnerable. From this it follows that fleets with the assistance of carriers alone will rarely be able to establish air superiority within range of the enemy's air bases, and the protection of the merchant ships in these areas against the attacks both of surface craft and aircraft will have to be provided mainly by aircraft. This is especially true within range of the single-seater fighter, which, as I have shown, at present dominates the fighting in the air.

Although air transport is increasing in importance, it is unlikely that the aeroplane, as we know it today, will generally replace merchant ships in carrying materials across the sea, since the weight of fuel to be carried is out of proportion to the useful load. Consequently, the routes used will have to be those which are out of effective range of the air bases of potential enemies, and where this is not possible bases must be established from which the ships can be protected and an enemy's attack neutralized.

Merchant ships are not only threatened by the surface raider and aircraft but by the submarine also, and the experience of this and the last war has shown that aircraft are

essential both for attacking submarines and for assisting escorting vessels to deal with the menace. For this purpose air bases are necessary from which aircraft can patrol the shipping lanes, and areas beyond this range require carriers to supply the air cover. As the range of aircraft increases these areas will contract and the need for the carriers will be reduced.

AIR BASES

Although the range of aircraft is increasing, and it may not be long before aircraft can fly round the world without refuelling, it will always be necessary to have bases at comparatively short intervals on two grounds: economy of fuel and to provide places of refuge, repair and maintenance.

The requisites of an air base differ materially from those of a naval base in the past. Formerly a compact area easily and economically defended containing a good harbour was what was wanted. But air bases must afford room for a number of landing grounds not too close together and be capable of defence against the scale of attack, both by air and land forces, to which it is exposed; and this scale, as far as air attack is concerned, will depend on the distance of the potential enemy's air bases. If the enemy is within single-seater fighter range, a large area is necessary so that a proper air defence can be developed and dispersion be possible. Or friendly territory must be within reach from which aircraft can operate, using the base as an advanced refuelling place. Otherwise an enemy will be able to establish air superiority over the base and capture it by airborne or oversea attack, or by a combination of both, as was proved by the capture of Crete in 1941.

As far as defence is concerned, the distance apart of such bases depends on how much of the sea route passes within short range of the enemy's aircraft. Wherever the route passes within range of an enemy base from which the single-seater fighter can work, a base is required from which the defending aircraft can neutralize the enemy; otherwise the bombers and torpedo aircraft working under cover of the fighters will take heavy toll of the merchant ships and their escorts. Where the distances are greater the threat of the enemy's long range aircraft can be dealt with by carriers or by long range fighters.

HOW DO WE STAND?

In the light of what I have said, what is the position of the British Empire?

First there is the heart of the Empire, the main base of its munition supply where is the great bulk of its white population, situated on



By courtesy of the British Overseas Airways Corporation



The Sea of Galilee, shown in these two pictures, and Lake Habbaniya, west of Baghdad, are the only two alighting places used by flying boats between the Mediterranean and the Shat el Arab at the head of the Persian Gulf. (Opposite) Egypt has been called the Clapham Junction of the air routes to the East. Alexandria Harbour provided a good alighting place for flying boats of the British Overseas Airways and was at the parting of the routes to South Africa and to India



By courtesy of the British Overseas Airways Corporation

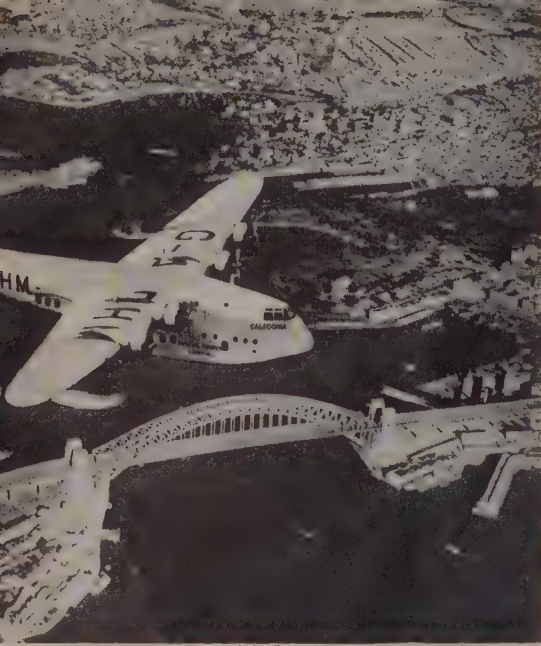
a small island within close range of the Continent. This is not easily protected from air attack, and the Channel is little more than a tank obstacle to an invading army. There is inadequate room for developing a training organization of sufficient size for the air force necessary for the defence of the United Kingdom itself and the overseas possessions of the Empire. Although the munition industry, based largely on coal supplies, is generally situated in the less vulnerable parts of the country, all is within reach of a determined bomber force. Consequently air forces sufficient to prevent an enemy from gaining air superiority over the Channel and South of England are essential, and much of the training organization which is necessary to maintain these air forces in war must be relegated to those parts of the Empire which are least exposed to attack. Canada, where there is

almost unlimited room and large resources of raw material and manufacturing capacity at hand or in the United States, is the most favourably situated of the Dominions.

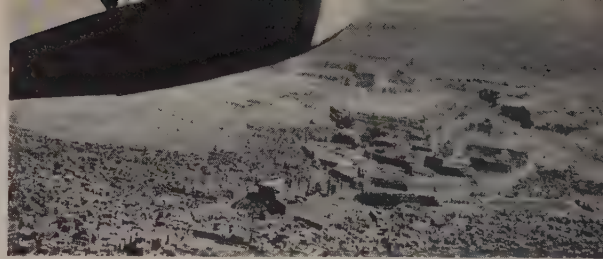
Since air bases are available within short range of the south and south-east coast of England little warning of attack can be obtained, consequently these air forces must contain a large number of fighter squadrons in order to ensure that a considerable number can be kept in constant readiness in war without over-working the whole. A big bomber force is necessary for defence by counter-attack in order to prevent a dangerously large force of enemy aircraft from using the bases within easy reach of this country.

SUPPLY ROUTES MUST BE SAFEGUARDED

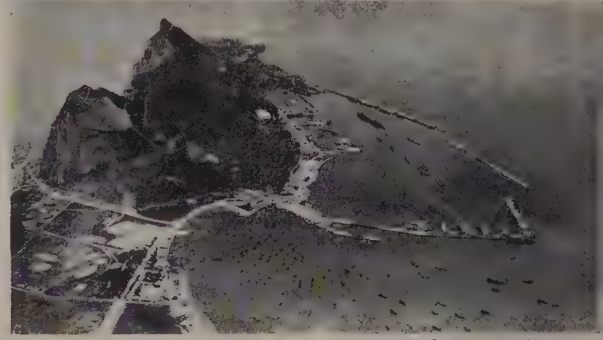
The United Kingdom does not contain many of the raw materials necessary for



By courtesy of the British Overseas Airways Corporation



By courtesy of the British Overseas Airways Corporation



Exclusive News Agency

Qantas Airways, operating the stages of air routes to Australia lying between Singapore and Australia in cooperation with British Overseas Airways, used Sydney Harbour (above, left) as their terminus up to 1939. (Top, right) The Citadel at Cairo. To the left lies the desert near the Suez road which provides good landing grounds. The Nile above the Barrage at Cairo affords an alighting place for flying boats en route to the Sudan. (Bottom, right) Gibraltar Harbour, long used by flying boats, has since the collapse of France become an important landing place en route for Africa in spite of the indifferent and only airfield on the racecourse to the left of the picture. (Below) Carriers provide a movable base for aircraft supplying air support out of range of shore bases

Fox Photos



munition production, such as oil, bauxite, tin, nickel, copper, and can only grow a proportion of its food requirements. Consequently at least the Atlantic sea route must be protected against prohibitive loss of shipping through submarines or air attack in order to prevent the centre of the Empire from being starved of food and raw materials. But to be able to reinforce the other parts of the Empire in the event of attack, or to enable their resources in men and material to be used where most wanted, other routes than those crossing the Atlantic must be protected.

First in importance is the route through the Mediterranean to the Levant and on by the Red Sea to India and Australia, and the air route via Baghdad and the Persian Gulf. Its protection against air and submarine attack along the west coast of Europe and through the western and central Mediterranean is a matter of very great difficulty since it is obviously impracticable to secure bases in France and the Peninsula, and the experience of the war has shown that the Axis has obtained assistance in this part of the world. The distance of Gibraltar is inconveniently long to be covered by the defence forces using bases in England, and Gibraltar is a most indifferent air base, difficult to defend from air attack except by A.A. guns and deep shelters in the Rock. On the African shore there is Tangier, once a British possession and now nominally an international one, the control of which the Spaniards have assumed. It is, however, small for an air base. The suggestion previously discussed for exchanging Gibraltar for Ceuta might be reconsidered, for Ceuta with a sufficient hinterland would be a good air base from which to protect shipping as it passes through the Straits of Gibraltar.

Next comes Malta in the central Mediterranean. The war has shown how costly it is to defend it against strong air forces based in Sicily and Italy without the power to use the African coast for aircraft supporting its defence. Until Cyrenaica was occupied by the Eighth Army, Malta was more of a liability than a material asset, however inspiring its heroic defence has been; but once it could be used as an advanced base it has proved invaluable for the attacks on the Axis communications.

The Aden Protectorate is already an air base and has sufficient room for its defence, and as neither shore of the Red Sea is held by powers having the resources to threaten the British interests, the southern exit of the Red Sea is sufficiently protected by Aden. Thus the route to India is secure, and that Empire has,

of course, all the room and resources it needs for developing an air force capable of defending the country and routes round its coasts.

When Burma, Malaya, the Dutch East Indies and the Philippines have been recovered, it is presumed that they will be placed under the protection of the British, American or Dutch and will thus enable the route to Hong Kong and the Far East to be protected. The same countries will enable the route to Australia to be secured. Once the Japanese have been driven out of the islands they have seized and have been deprived of the mandated islands they have fortified contrary to their undertakings, the Pacific route should be free from threat. Thus the most difficult problem in connection with the future protection of the British Empire is the securing of the route through the Mediterranean. Once this has been done, the establishment of air bases by the British and the Americans on territory already in their possession before the war should secure the routes between the British Empire and the U.S.A. on which the maintenance of the peace of the world would seem in the future necessarily to rest.

A DIFFERENT PROBLEM

The effect of the increase of carrying capacity on civil transport aircraft differs greatly from its effect on military aviation, for though much of this capacity must be diverted to increasing fuel capacity for routes over the wider ocean spaces, where they have to be crossed direct in the interest of speed, a civil air service has to attract custom and pay its way. Since nothing is so uneconomical as the carrying of unnecessary fuel, stages on most civil routes are made as short as possible so that all available carrying capacity may be diverted to pay load. For this, bases at frequent intervals are required and should be selected where passengers and freight can be most readily secured.

Before the war a stage of about 300 miles was the average on the long-distance routes, increasing over the sparsely inhabited countries and decreasing where there were frequent places *en route* at which passengers wanted to join the aircraft. Considering the number of aerodromes which have been constructed during this war by the belligerents in every country except Spain, Portugal and Sweden, there should be almost an embarrassing number to select from. Provided some international agreement can be reached about the freedom of transit and landing, it should be easy to establish civil air routes all over the world.



Kodiak

Alaska's New Naval Base

by ISOBEL W. HUTCHISON

It was when plant-hunting for the British Museum on the Aleutian Islands in 1936 that chance landed me for a couple of weeks on the island of Kodiak. Like the late Dr Knud Rasmussen, who rejoiced that he was born before the dog-sledge became obsolete, I count myself lucky to have seen this remote beauty-spot of the North Pacific in its primitive freshness, before the clang of war-time activity had turned it into a 'boom' town and covered its flower-strewn mountainside with tents and Nissen huts. For since 1939 Uncle Sam has been pouring men and money into his 'attic' in a determined effort to close the skylight.

In the defence system of Alaska, a territory which three years ago was so unprotected that its Governor declared it could be captured by twenty Japanese parachutists, three important naval bases have now been established: Dutch Harbour (always a small base for the

Bering Sea Coastguard Patrol), Sitka, and Kodiak on the island of the same name.

Of these three bases Kodiak is the largest and the most important. It has been called the Pearl Harbour of the north and is about the same distance (some 3300 miles) from Japan. Dutch Harbour is several hundred miles nearer. As long as the Japanese continue to occupy Kiska at the other end of the Aleutian chain, Dutch Harbour and Kodiak are the nearest North American bases to Japan. It must be remembered, however, that landings were made by United States troops last autumn in the Andreanof group of the Aleutians, which lie between Unalaska and Kiska, thus giving American bombers a new springboard from which to attack Kiska and Attu, both of which were undefended when the Japanese seized them in June 1942.

In addition to its important strategic position as a base for attack on Japan, Kodiak is



Stanford, London

only 510 miles by air from Fairbanks in central Alaska, the present terminus of the new International Highway from Edmonton. The naval base at Kodiak thus guards the line of supply to Alaska, Russia and China.

The harbour is an excellent one, practically landlocked by islands, and said to be large enough to accommodate at need most of the U.S. fleet. So rapidly and secretly has work at this base been pressed on that an American Admiral reported it to be in readiness for "Offensive or defensive action" more than a year ago, greatly in advance of anticipation.

Though it is Alaska's second largest island, Kodiak is very little known even to Alaskans, for it lies off the regular steamer track from Seattle to Dutch Harbour and the Bering Sea. It can be reached in less than two days from Seward on the Alaskan mainland, which is seven or eight days' sail from Seattle. But when I visited Kodiak by this route in 1936 I found that the journey from Seattle might take nearly as long as a trip round the world if one missed, as I did, the monthly boat at Seward.

I betook myself to a small hotel in the main street of this little Alaskan port, to await the next sailing for Dutch Harbour with what patience I could muster. "If I were you," said the sympathetic hotel proprietor, dexterously prizing the last nail from the lid of the big wooden crate which contained my botanical outfit (for I intended to botanize at Seward also), "seeing as you've lost the *Starr*, I'd go down to the steamship office and see if I couldn't get a passage on the *Curaçao* as far as Kodiak. *Curaçao*'s due in, one of these days."



Stanford, London

"Kodiak, where's that?" I inquired blankly, for I had never heard of the place.

The hotel-keeper looked at me disparagingly, then, deciding that a mere *Cheechaco* couldn't be expected to know much about Alaska anyway, he explained.

"Waal now, Kodiak—it's an island. Come to think of it, I should say 'bout the biggest island in Alaska. And it lays out there in the Gulf. No, it's not one of the Aleutians, but it's on the way there. Boats reach it from here inside a couple o' days but there ain't many goes. But if it's flowers you want, you'll get better flowers at Kodiak than at Dutch Harbour, or Seward either for that matter. Plenty of baars there too. Kodiak's the home of the biggest brown baars."

I decided to take my host's advice.

When I visited the steamship office, the clerk, who was in a hurry, brushed aside all hesitation and booked me without more ado

for a passage on the *Curaçao*. Thus it was that on a June morning some days later I embarked for an island I had never heard of, fortified by the assurance from the clerk that there was a hotel there, "Or if there isn't, you'll find somewheres to go."

* * *

I found the small vessel already crowded with sallow-skinned Filipino lads bound for the salmon canneries. Fifty years ago Karluk, on the west shore of Kodiak, was the largest salmon cannery in the world, and the Karluk River, only sixteen miles long, was one of the most famous salmon streams. Millions of fish struggled up this small waterway at the spawning season to the Karluk Lake, and the river was a solid mass of fish from bank to bank.

Not only do salmon flourish on Kodiak, but the delicious salmon-berry (*Rubus spectabilis*) and other wild fruits grow there to an outsize. Berries, as well as fish, constitute the chief part of the diet of Kodiak's most famous inhabitant, the great Alaskan Brown Bear. This monster, the largest carnivore in existence, grows to a greater size on Kodiak than elsewhere in Alaska. The record pelt taken measured eleven feet three inches, its owner tipping the scales at fifteen hundred pounds.

The Alaska Game Commission recently estimated that the bear-population of Alaska considerably outnumbered humans. Of about 93,500 animals, 75,000 are Black Bear, 8500 coastal Brown Bear, and about 10,000 Grizzlies and Brownies in the interior. When compared with the latest human census, taken in 1940, this gives a preponderance to the bears of about 20,000.

The coming of war to Alaska, however, bids fair to upset this preponderance. Though stringent game laws were already in force, limiting to two the annual bag allowed to hunters of the Brown Bear, this has recently been reduced to one. Despite this, owing to the influx in the last three years of thousands of workmen and army personnel, wild life in the territory is seriously endangered. Writing in a recent number of the *Alaska Sportsman*, the editor remarks:

Just how great is the illegitimate taking of game is difficult to determine. It is evident however in the statements of fishermen, miners, defence workers and soldiers, who make such remarks as "Well, I killed two deer on the beach this summer," or, "I shot my first bear this year," and the fact that many outdoorsmen report finding dead bears, deer, beavers and other wild life near the boom towns. This summer [1941] one man was shot—out of season for any game animal—when mistaken for a bear

by a hunter without a licence. Many do not know licence requirements or the first thing about sportsmanship. . . . The limited number of wild life agents in Alaska cannot possibly prevent this slaughter of game. An awakened public is necessary to prevent further serious inroads which otherwise will result in fewer big-game animals for years to come.

* * *

When the *Curaçao* steamed into the harbour of St Paul, Kodiak, at seven o'clock on a fine June morning, the scene surprised me by its beauty. The old Russian village of St Paul lies on the fringes of dark woods at the foot of soaring mountains which form the backbone of the island, their splintered peaks glittering with snow. The sea was a radiant blue. Wooded islands closed the mouth of the harbour, reminding European travellers of the entrance to Bergen, which lies in much the same latitude as Kodiak and has a rather similar climate. For Kodiak has also its Gulf Stream, the Kuro Siwo or Black Current of Japan. This is diverted southward by the Aleutian Chain, giving to south-eastern Alaska its mild, moist climate.

I found comfortable quarters at the Sunbeam Hotel, kept by a Dane, Mr Charles Madsen, a famous bear guide. It was frequented in the season by big-game hunters, who in pre-war days were almost the only visitors from 'outside'. The hotel had just been reconditioned and was clean and tidy. I was astonished to find hot and cold running water in my room. Above the basin this notice was affixed to the wall: "We are trying to run a nice clean hotel. Please try and help us keep it that way and don't lay on the bed with your shoes on. Some people do."

Kodiak's first known inhabitants were the Aleuts, a once numerous but now nearly extinct race of Asiatic origin, somewhat akin to the Eskimos. Recent excavations in old village sites on the island, however, have revealed traces of a people of unknown origin who apparently pre-dated even the Aleuts. The first white man to discover the island was the Russian trader, Stephan Glotov; he came in the wake of Vitus Bering and Alexei Chirikov, who put the Aleutian chain and much of the Alaskan coast on the map in 1741. It is remarkable that both Bering and Chirikov appear to have passed close to Kodiak on their separate voyages (for storm had parted them at the outset of their epic journey) without making any landfall nearer to Kodiak than the Shumagin Islands, which Bering named after one of his sailors who died of scurvy and was buried there.

On September 8, 1763, Glotov landed at



Photographs by the author

To no spot in America has the war brought greater change than to the quiet harbour of Kodiak, now a great naval base

Alitak Bay on the south coast of Kodiak, but it was not until 1784 that the Russians really took possession of the island. On August 3 of that year the famous Russian trader, Shelikof, whose name is commemorated by the tempestuous Shelikof Strait which separates Kodiak from the Alaskan peninsula, landed at a spot about half-way down the east side of Kodiak which the Russians named Three Saints Bay after their ship. He brought with him his wife and nearly two hundred semi-civilized hunters and traders. "With them" (says a recent writer) "came gunpowder, greed and the blessing of the Tsar of all the Russias." This, however, is scarcely fair to the Tsars, who had little knowledge of what those who traded in their name were doing on the other side of Siberia. When rumours of their atrocities at last reached the Empress Catherine II she at once ordered the explorer Billings, who was at that time at Okhotsk, to make inquiries and report upon the behaviour of the traders. She also sent missionaries to the islands, where the Russian Orthodox Church is still the sanctuary of the natives.

The names of certain of these brave men, some of whom became martyrs for their faith, are bright lights in a dark firmament, for it cannot be denied that the Russian traders were ruthless in the extreme.

In 1791 the Russian Governor Baranof, then in charge of the Russian-American Fur Company, saw the advisability of moving the headquarters of the company from Three Saints Bay to St Paul, about fifty miles north. This move was not only because St Paul was a better harbour but also because of the forest which still clothes this north-eastern end of the island. It provided the Russians with building material for their houses, at least one of which (now the hospitable home of the manager of the Alaskan Commercial Company on Kodiak) is still standing and claims to be the oldest Russian building in Alaska.

The forest of Kodiak extends to between thirty and forty thousand acres. It is the last western outpost of the great forests which cover the coastal regions of Alaska. These reappear again in Kamchatka, but the inter-



(Left) After Katmai's eruption, Kodiak bogs were white with ashes, Now they are white with bog-cotton. (Middle) A small lake near Kodiak village sheeted with yellow water-lilies. (Right) The spiked leaves of the tall Fatsia make penetration of Kodiak's forest difficult

vening Aleutian and Komandorski Islands are quite destitute of timber.

* * *

In June 1941 Japanese Mitsubishi bombers dropped 2000-lb. bombs on Dutch Harbour. It now appears that these bombers were based on a powerful Japanese task force aimed at the North American mainland, and that Alaska was saved "as by a miracle" by a handful of fighter pilots from a secret base on one of the islands west of Unalaska. The Allied occupation of the Andreanof Islands in the Aleutian chain last July, and the recent reoccupation of Attu, make it increasingly unlikely that Japanese planes will penetrate to Kodiak, but should they do so, perhaps their bombs will cause less dismay to the inhabitants of St Paul than they might do elsewhere in Alaska, for Kodiak lies close to the centre of the earth's greatest volcanic activity and the still warm volcanoes of the Alaskan peninsula.

During the great eruption of Mt Katmai in 1912 Kodiak, one hundred miles distant, was in complete darkness for more than two days, and the ground in the north-west corner of the island was covered with volcanic ash to an average depth of one foot, and very much more where the ashes drifted. Trees and ground vegetation appeared to be ruined, and even the bears became bald through the

action of the volcanic ash on their fur. But to the surprise of scientists, within a few years vegetation had become even more luxuriant than before, and the bears had recovered their original glossy coats.

Kodiak is now one of the most fertile farming areas in Alaska. Galloway cattle, imported from Scottish stock, flourish in its meadows, this breed having been selected on account of its hardness and because Scotland has a somewhat similar climate.

Like the bears, flowers grow to an unusual size on Kodiak. The wild roses which I gathered in June were the largest I had ever seen. In a few days I had collected several hundreds of flower specimens, which were particularly rich on the slopes of Pillar Mountain, a steep hill rising behind the village, surmounted by a cairn from which a magnificent view could be obtained over the island-dotted harbour. Down in the forest under the spruce grew the fragrant little single-flowered wintergreen (*Pyrola uniflora*) with a perfume not unlike the freesia. Close beside it a large pond was a sheet of yellow water-lilies, the glossy leaves growing so thickly that the water was hardly visible. Blue lupin and yellow arnica made the meadows brilliant, but penetration into the deeper parts of the forest was almost impossible owing to the large sharp-spiked



Wild lupin embellishes the outskirts of Kodiak's timber belt, which covers over 30,000 acres and is the most westerly outpost of Alaska's forest zone

fatsia with its huge prickly leaves.

Several roads led out from St Paul for a mile or two to north and south. On account of bears botanical exploration had to be restricted to this area. The oldest of the roads, leading to Mill Bay at the north end, was constructed by the Russians more than a century ago, for at this spot grain and meal was landed from their settlement at Ross in California. The longest road was the Abbert Highway in the opposite direction from Mill Bay. It was carried for about seven miles southward to Buskin River, past the site of the new naval base. Who Mr Abbert was I am not very certain, probably an official of the Alaska Road Commission which was working on Kodiak in 1936. Though sadly hampered for lack of funds, it owned the solitary motor car on the island, an open truck which plied between the Commissioners' tent at the riverside and St Paul, or elsewhere as circumstances required. A notice-board bearing the imposing title "ABBERT HIGHWAY" stood at the end of the street where the road branched off along the cliffs. On my first walk along this wild headland to the alder-groves and thickets of the Buskin I was a little apprehensive of a chance encounter with large bears, for I had been told that on occasion they frequented this river. A chance meeting with a roadman

who was clearing the ditches on either side of the track under a large mosquito veil did little to reassure me. "Bears!" he exclaimed in answer to my inquiry. "Don't you worry. The bear'll see you first, and then *you won't see no bear!*" It was more cheering to discover on the side of the stream, a few miles ahead, the big white tent of the two officers in charge of road-making.

Though the door bore a large placard, "Please don't ask for credit!" I had scarcely passed it when I was hailed by one of the road-makers and hospitably invited to partake of lunch. This included the biggest T-bone steak I had ever seen. Everything in Kodiak, its hospitality included, seemed outsize like its bears.

By the time I had finished my steak, and sampled an excellent home-made rhubarb pie, rain had begun to fall, and I enjoyed the privilege of a run back to the Sunbeam in the island's only car.

As the Abbert Highway approaches the village it skirts a cliff above the so-called Woman's Bay (a name surely inappropriate to the present turn of affairs). In 1936 one of the first planes to reach the island mouldered with outspread wings in its waters like the skeleton of some prehistoric bird, abandoned by its daring pilot. Little could he have dreamed six years ago that it was to be the vanguard of an air fleet destined to save Alaska.

To no spot in North America has the war brought more change than to Kodiak's quiet harbour. But still, above the busy scene in a grove of trees, with its belfry on the ground beside it, the old Russian church stands as a last link with the past. Its bells were cast of tin presented by Vancouver himself when he explored the Gulf of Alaska at the close of the 18th century. The church was founded in 1796 by a band of ten Russian missionaries, of whom the most famous was Father Herman, whose relics (a cap, a heavy iron cross and a flail) are still carefully preserved in the interior of the quaint old building, together with a beautiful Russian Bible embossed in platinum and gold. Father Herman died in 1837 and was buried on Spruce Island at the entrance to Kodiak harbour. Among the faithful of his church in Alaska his name is still as green as the trees above his grave, and the island where he lived and worked is now Alaska's stoutest bulwark of defence for the New Road back to the Old World—a road which today carries munitions of war, but which in the years to come may well prove one of the strongest links in the chain of international friendship.

The Structure of the Past

I. Ancient Egypt: Expansion and Decline

by SIDNEY SMITH

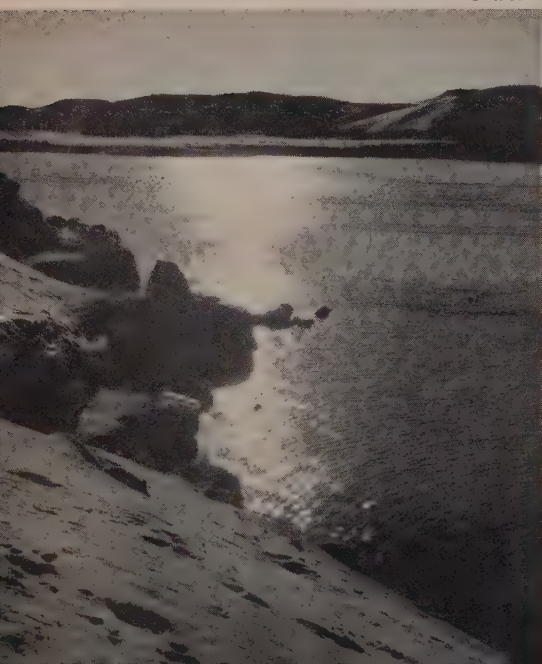
Before the outbreak of the present war, it was commonly said that another world-wide conflict would be "the end of civilization". The organization and morale of modern industrial society has so far stood up to the test far more effectively than even the optimists had hoped; but great civilizations have indeed collapsed and even vanished altogether in the past, and while the conflict is still raging and forcing great changes in the structure of society and the alignment of power all over the world, it is interesting to examine the causes, in particular those of an economic and military character, which led to the rise and fall of the outstanding cultures of the past which have so far been discovered. Professor Sidney Smith opens this series with an article on the ancient civilization of the Nile Valley; other articles will follow on the Indus Valley, Mesopotamia, Greece and Rome

EGYPT consists of the banks of a magnificent waterway, broadening at the northern end into a triangle; the points of entrance and exit are limited. In the south the border, at the first cataract, is short, for traffic cannot stray far from the river. To the east, more than one of the wadis were doubtless used as roads to and from the Red Sea in ancient, especially pre-dynastic, times; Hammamat must always have been the most important, and the traffic was never likely to turn into an invasion. The north-western corner of the delta always allowed a limited infiltration; continued year by year, such infiltration could swell to a considerable volume, but attack in that quarter could easily be repulsed. The only boundary permitting entry by land over

a considerable part of its length was that running from Lake Timsah to Lake Menzaleh. The country was easily defensible; the fact played a supremely important part in her history.

Egypt, a long narrow strip, might be expected to fall into three or four sectors, according to local interest. Main divisions are easily discerned. The south stretches from Elephantine to El Kab. Thence to Atfih and the Fayum may be called Upper Egypt, the kingdom of the white crown. From Hawara to Cairo, the region of quarries and pyramids, lay a population whose adherence could, in early times, establish the rule of a dynasty or end it. The delta was Lower Egypt, the kingdom of the red crown, a physi-

Toni Muir



H. J. Shepstone



cal unity utterly different from the other divisions.

Such unity as Egypt has depends upon the prosperity bestowed upon her by the beneficent waters of the Nile. These contain no salts or deleterious matter. When man came down from the once wooded plateau in the west into the valley, he did not need to provide protection against river floods, as he had to do in the valleys of the Tigris and Euphrates; he simply made use of the results. Barley, wheat and flax grew in abundance, vegetable gardens and vineyards were profitable, pasture was ample to maintain ever-increasing flocks and wild game, fish and poultry abounded. In every district even the poor could live with little effort, and live, compared with men in other lands, relatively well.

There were considerable social differences in the various sectors in the earliest times, and these persisted. In the south the true Egyptian population was sparse and for the greater part transitory, bent on return to the north. Upper Egypt falls naturally into a series of districts within which inter-marriage and man's constant tendency to exclude strangers produced separate communities; such districts, known to the Greeks as *nomes*, were self-contained administrative units from the time when the earliest extant records were written, so that the basis of government was a kind of manorial system. In the quarry region, the miners and craftsmen necessarily chose to settle on the river-bank as near the rock-faces as possible; though the actual area inhabited shifted from century to century, the

great cities preserved throughout their peculiar character as industrial centres, as against the settlements in Upper Egypt which only rose to be cities owing to political developments.

In the delta, on the other hand, the fenmen always huddled together in cities which were not the result of industry or politics, but of the growth of markets. It mattered very little whether the markets had become, in pre-dynastic times, centres of small kingdoms, or whether, after the union of Egypt, they became the capitals of *nomes*. The characteristic of mud-flats, as can be observed in the earliest remains of southern Iraq and in Sind, is settlement in cities. The divisions that result from such settlement are different in their essential character from the divisions introduced in the quarry region and from the landed estate units of Upper Egypt, but they have some superficial characteristics that are the same. One of the superficial resemblances is, that the cities also are self-contained units, in which all the organization required for a state can be reproduced in miniature, as it were.

In Upper Egypt, each nome had its own treasury, its own secretary and so forth; the lord of the nome had precise information as to the produce of each farm. Similarly, the delta princes, using the town authorities, could at any time give a fairly accurate estimate of the import and export, the current prices and profits. Thus there existed in Egypt a machinery that achieved, without much expenditure, all the results of a careful census. Other states, for example Babylon in the time of Hammurabi or Assyria from the ninth century onwards, aimed, with in-

Toni Muir

(Opposite: left) Nile Valley scene; (right) "From Hawara to Cairo, the region of pyramids": looking down on the three great pyramids of Egypt. (Right) "Such unity as Egypt has depends upon the prosperity bestowed upon her by the beneficent waters of the Nile." An irrigation ditch; the basis of Egyptian agricultural wealth and the ancient method of transport still in use







British Museum

(Opposite) "Pasture was ample to maintain ever-increasing flocks." *The agricultural wealth of Egypt: a painting of cattle in the tomb of Queen Nefertari.* (Above) "Wild game, fish and poultry abounded"; hunting in the reed-swamps about 1200 B.C.

finite pains, at compiling such information. It is characteristic of Egypt that the result was obtained without difficulty and without precise intention.

Strong administration can make use of such machinery to extract the utmost effort from a country. Weak administration will, of course, promote the centrifugal tendencies in such local district governments. Egyptian history is chequered during the period of native rule by the alternation between the two. The modern historian groups, in a chronological system only approximately, not accurately, defined, the periods of strong administration under the headings Old Kingdom (2800–2250 B.C.), Middle Kingdom (2150–1775 B.C.), New Kingdom (1580–1100 B.C.), those of weak central authority as First Intermediate (2250–

2150), Second Intermediate (including the Hyksos period) (1775–1580) and Late (1100–530 B.C.), the last often dubbed the Decadence. The question of causality arises in a form that can never be solved with any finality. No glib generalization can veil our ignorance as to whether strong administration at the centre so weakened local authorities that total collapse finally resulted, or whether weakening at the centre was the immediate cause, or rather the result, of stronger local administrations. What is certain is that the rulers during the great periods of Egypt found it necessary to control lands beyond Egypt's borders, and that the constant tendency to relax control beyond the borders invariably led to Egypt itself breaking up, and very often to invasion.



H. J. Shephstone

Egyptian civilization in the South, where the population was sparse

A good point, then, for basing any observation of the causes of Egypt's rise and decay will be the reason for the tendency of Egypt to split up when no aggressive policy was followed. That reason must be sought in the interests of Pharaoh's subjects. The governors of the extreme south and the officials and soldiers with them were only occasionally able to boast that the trade with the Sudan was of greater interest to their king than the goods brought from Punt, presumably Somaliland, or Sinai; for the most part they could hardly procure sufficient military assistance to secure order and the continuance of trade. Only exceptional circumstances, that is a Pharaoh willing to maintain an army in the field, would keep this province closely bound to the north. In Upper Egypt the people were at all times unwilling to undertake wars; they were sometimes even unwilling to keep out or drive out foreign invaders. They felt themselves remote from danger, and the

natural inertia induced by the adequate supplies of necessities provided by the rich soil led to a marked reluctance to take up arms.

A striking example of this is to be found in the tolerance extended by the people of Upper Egypt to the rule of the Hyksos kings over the delta area and even south of it, during the later part of the 18th and 17th centuries B.C. No serious effort was made to drive these invaders, who came through Palestine, out of Egypt for over a century, not because that task was impossible or even particularly difficult. When Kames, king of Thebes, made up his mind to deliver Egypt, his grandees said, "We are at ease holding our part of Egypt," and pointed out the advantage of enjoying what they held, and leaving the foreigner alone in his possessions. This illustrates an attitude that must have been common both earlier and later than the recorded instance. Thus in the troubled time of the First Intermediate period, a nomarch

of the hare-nome, the region round the quarries at Hatnub, was able to represent his refusal to recognize the central authority as beneficence to his own subjects, "I rescued my city in the day of violence from the terrors of the Royal House". Willing to enjoy the fruits of foreign conquest when they were obtained, these nomarchs of Upper Egypt, and of the quarry region too, were not disposed at any time to devote their wealth or energies to fighting even in other areas in Egypt, much less in Asia.

These sentiments did not prevail in the delta. There the geographical conditions imposed lively intercourse with foreign lands, and the people in the towns were by no means blood-brethren of the Upper Egyptians. Some part of Egyptian prehistory is concerned with the infiltration from the western desert of Libyan tribes. Throughout the later centuries Libya was invaded by fresh peoples, and the result was further admixture of foreigners in the delta population. From these men strong Pharaohs seem to have recruited a police force, and, even more important, a standing naval force. On that force Egypt's relations with the countries with which her trade was most important depended, not exclusively, but to a considerable extent.

These countries were the islands and coasts of the eastern Mediterranean. The trade with Nubia supplied the royal treasury with gold; the trade with Punt, probably Somaliland and perhaps the Hadhramaut, supplied

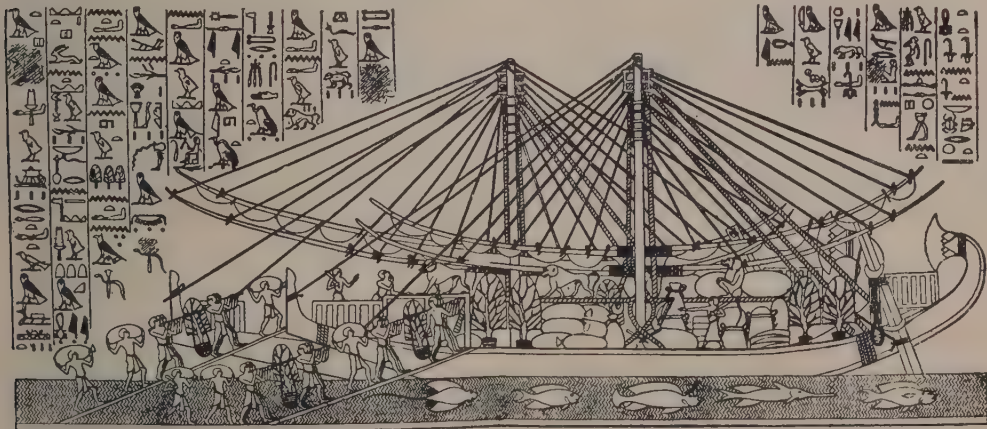
much appreciated incenses and essences. But the trade with the Mediterranean lands brought raw and manufactured materials with which Egypt could never finally dispense; all her history consists of an oscillation in policy, veering from the complete acceptance of this necessity and the determination to keep the trade securely under Egyptian control, to a desire not to be involved in foreign commitments together with a passive acceptance of control by others.

One element in the trade, which can be traced from about 3000 B.C. onwards, till about 1400 B.C., was the connection with Crete, and later with Mycenae. The archaeological evidence is sufficient to prove this intercourse, which might, by itself, be explained as due to Cretan fleets were it not that other sea trade must have been carried at least to some extent in Egyptian ships. The fact seems to be that though Egypt can never have been a supreme sea power, her ships did ply both westwards and northwards. Moreover, the security Egyptian ports supplied was essential to other shipping, so that Egyptian influence with maritime powers was always a potent factor in in-



British Museum

"The trade with Punt, probably Somaliland and perhaps the Hadhramaut, supplied much appreciated incenses and essences": (below) loading a vessel with merchandize for Queen Hatshepsut's expedition to Punt. (Above) "One element in the trade was the connection with Mycenae": Mycenaean pottery of about 1380 B.C. found in Egypt



From 'History of Egypt', by J. H. Breasted (Scribners)



Ton Mair

The famous colossal statue of Amenophis III, who ruled over Egypt at the height of its power, 1411-1375 B.C

ternational politics that has not yet been properly appreciated. A striking testimony to such influence may be found in the archives of the Hittite Empire, the earliest documents in which belong to the end of the reign of Amenhetep III, or the time of the heretic Amen-

hetep IV, Akhnaten, after 1400, and cover the period down to about 1250. During that time the Pharaohs corresponded not only with their 'brothers', the suzerains of the Hittite Empire, when they were not at war with them, but also with the kings of small

kingdoms situated along the southern coast of Asia Minor. Egyptian influence along this coast can be assumed for an even earlier date, not later than the 16th and possibly as early as the 18th century B.C., for the hieroglyphic writing adopted to express an Indo-European language spoken along that coast employs one or two symbols that can only be derived from Egyptian hieroglyphs. Antiquities of local workmanship copying Egyptian forms have been found even in the north of Asia Minor, near Ankara. The little states on the coast of Pamphylia and Lycia lived on legitimate trade, and piracy as well; diplomatic relations with Egypt as attested by documents of the early 13th century show how far-reaching Egypt's international position became under strong central control.

In Cyprus there is no certain evidence of direct interchange of goods with Egypt till the end of the 15th century B.C.; the island seems to have remained outside the main flow of international trade, for some reason we do not clearly understand, till this comparatively late date. But the evidence for extensive trade with the towns of the Phoenician coast up to and including the port which lay opposite the northern tip of Cyprus at Ras Shamra, is abundant, beginning at a very early period and only ceasing intermittently. Ancient Syria contained commodities of great value in the ancient world. The most important was wood. Cedar, obtained at first from the Amanus and later from the Lebanon, was particularly prized, not only by the Egyptians; the hard woods of Asia Minor, shipped at the northern ports, in the form of logs, were much used. The sand of the Orontes valley gave rise, owing to its composition, to a glass industry, and it was probably from that area that glass was first imported into Egypt, though some still doubt the fact; later the sand may still have been the usual material employed. The red and purple dyes for which Phoenicia was famous among the Greeks and Romans were already in use before the 15th century; the name Canaanite may derive from a name of the dye, as the Greek *Phoinikes* almost certainly derives from the Greek name of the dye, *phoinix*. Of such goods Egypt, though that land produced the necessities of life, had urgent need; no ruler of Egypt could afford to neglect the Mediterranean trade and any actual neglect was always attended by undue interest in Egypt by others.

It is sometimes said that Egypt provided the typical example of a civilization indigenous in the country, in its uninterrupted development and final decay. That is an erroneous conception that has nothing to do with the historical facts, as Flinders Petrie saw. If we



Stanford, London

seek to define the cause of Egypt's greatness in the three periods of strong central authority, the Old Kingdom, the Middle Kingdom and the New Kingdom, one fact stands out; Egypt during those periods controlled part or all of the Phoenician coast and at the same time the main road from Egypt through the



Stanford, London



Two Women

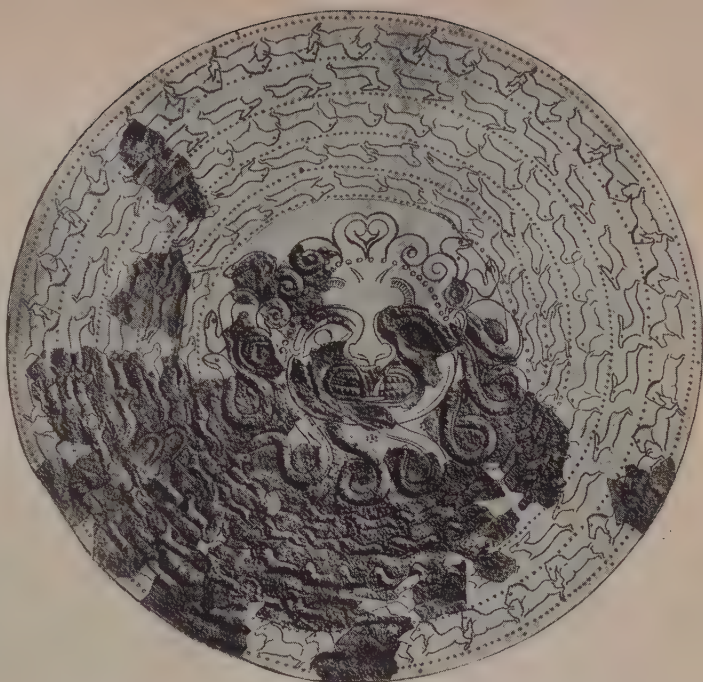


From 'Ancient Egyptian Paintings', by Mrs Davis (Chicago University Press)

"Even during the periods of strong central control, the struggle of those who would enjoy what they had and allow the effort abroad to cease, sometimes proved too strong for the personal rulers" - (top) An Egyptian divine party in the time of the 18th Dynasty. A painting from the tomb of a civilian official; (bottom) Nubians bringing presents to Pharaoh, about 1400 B.C.; this subject-people conquered Egypt about 730 B.C.

desert to Gaza, at least to the Lebanon, sometimes even further north. Similarly the cause of decline in the First and Second Intermediate periods and the Late or Decadent period cannot be dissociated from the failure of the rulers of Egypt during those periods to maintain control of the land route and to support their maritime allies. Every excavation conducted in recent years has emphasized this truth, none more clearly perhaps than the French excavations at Byblos, the modern Jebeil; the material remains of direct rule or the suzerainty of kings of the Old, Middle and New Kingdoms have all been found there. Further north, at Ras Shamra, the ancient Ugarit, and Atshanah, the ancient Alalakh, similar documents testify to the suzerainty of both Middle and New Kingdoms.

Even during the periods of strong central control, the struggle of those who would enjoy what they had and allow the effort abroad to cease, sometimes proved too strong for the personal rulers to resist. There is a good example of this in the XVIIIth Dynasty, and another in the early decline of the XXth. Ahmose, the Pharaoh who had finally driven out the Hyksos, and his immediate successors, based their rule on the maintenance of a strong army; the local administrations, strictly supervised by the sovereign himself, had to produce whatever was required for that purpose. Throughout the 16th century the Egyptian Empire in Asia expanded till Thutmose I about 1525 B.C. led his army to the Euphrates. When he died, troubles connected with the succession brought into power at court the set of officials who surrounded Queen Hatshepsut, nobility of Upper Egypt. They immediately called a halt to the military effort in Syria and concentrated attention on a trading expedition to Punt. They represented the interests of the old aristocracy as against the new military upstarts favoured by the kings; they preferred what they knew, the Red Sea trade, to the maintenance of control over Phoenicia. Thutmose III was only able to reverse this policy by a bitter opposition which led him to deface the queen's monuments when he assumed independent rights. The Theban priests, who regained control over the reigning monarch in the time of



British Museum

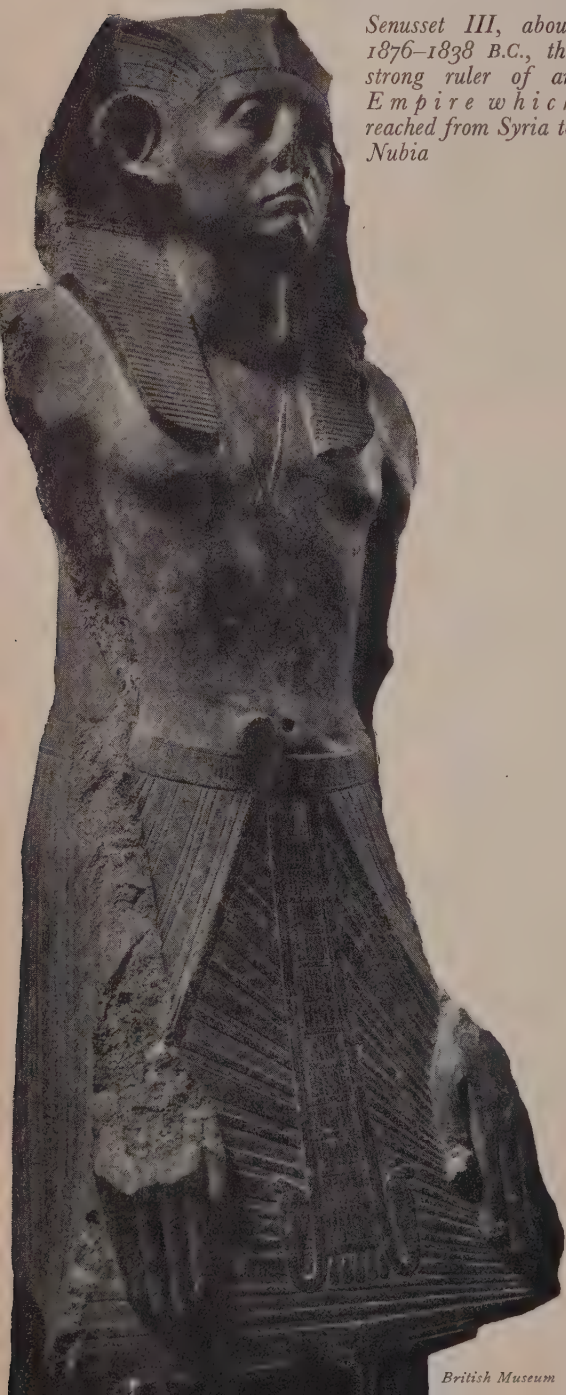
"The Saite princes won their victories with Greek and Carian mercenaries. Later, they were soundly beaten at Carchemish": the remains of a Greek mercenary's shield from the battle against Nebuchadnezzar, found in Sir Leonard Woolley's excavations at Carchemish

Tutankhamen, again allowed imperial interests to slide, and this time a new dynasty had to arise, basing its power on Tanis in the delta, before the Empire was saved. The same priesthood greatly increased in power after the reign of Rameses III; the Egyptian Empire ceased to be, and the delta was neglected.

The facts show fairly clearly that the autochthonous development of civilization was continuously and strongly influenced by foreign contacts, and that the climactic points were invariably associated with the expansion of Egyptian rule in Western Asia, and consequent increased influence in the eastern Mediterranean. After the heroic resistance to the attempted invasion of the Sea Peoples shortly after 1200 B.C., there are no more climactic points. Upper Egypt relapsed into the effortless existence reflected in the facile productions of the XXIst and XXIIIrd Dynasties, 1085-730 B.C. The priests performed with meticulous pains the ancient rituals. Scribes copied from ancient texts, sometimes well, sometimes ill; they do not seem to have been fertile in original compositions. The military nobility lost their taste for war but retained their titles. The poor,

ground by heavy taxation and tied by debt, were probably worse off, but they avoided fighting and did not starve. The revenues which had maintained an army kept a host of priests. There was one isolated effort to maintain a hold on Gezer, the Palestinian end of the land route, but it seems quite

Senusset III, about 1876-1838 B.C., the strong ruler of an Empire which reached from Syria to Nubia



isolated in a period lasting over two centuries. But Egypt had been very strong, and was easily defensible. The land remained independent.

During this long period of inert independence the divergence of interest and purpose between Upper Egypt and the delta increased. The most recent invaders of Libya, who came almost certainly from Asia Minor, had led a serious attempt at invasion of Egypt in the 13th century; foiled at that time, the Mashwash gained a footing in the delta by slow infiltration. They undertook service as mercenaries and so earned grants of land. Their settlements were controlled by their own leaders, who became important officials. Though they kept their peculiar personal names, and some features of their national costume, they adopted Egyptian religion and customs, and did not parade their alien origin. Slowly all power in the delta fell into their hands, till finally, about 950, Sheshanq I founded the XXIInd Dynasty, which rarely, and only for short intervals, controlled Upper Egypt. Though the founder was the only king of his line known to have conducted any military campaigns in Palestine, his success in establishing his rule as far north as Galilee re-established the prestige of Egypt in Phoenicia and consequently in the eastern Mediterranean. The interests of his dynasty remained in the control of sea trade in the delta cities. This policy can be followed in the annals of Assyrian kings from the second half of the 9th century to the beginning of the 7th, for there are no royal records from Egypt for the duration of the Libyan dynasty. It appears that the Phoenicians throughout this time of developing Assyrian power, first in Syria and then in Palestine, were in an awkward dilemma. Threatened from the land side by the Assyrians, they had to recognize their suzerainty by paying tribute; obliged to use Egyptian ports by the traffic they were sedulously cultivating with the western Mediterranean, they were not in a position to affront, or even to refuse alliance with, the ruler of the delta.

The decline of the Libyan dynasty and its final cessation of rule over the delta princes about 730 must in some way be connected with a change in Libya itself. We know that about this time the rulers of Napata in Nubia seized the oasis of Siwa, and introduced there the cult of a form of Amen worshipped in their own city. This move can only mean that Libyan trade with the Sudan was no longer in the hands of the coast cities, but that the other end of the traffic had obtained control. The end of this was to be foreseen; the Nubians gained control of Upper Egypt with-

out difficulty and finally established themselves firmly as masters of the delta princes. They followed (naturally, since they were interested in the same trade) the Libyan policy, a continuous attempt to thwart the Assyrians by the encouragement of revolt in Syria, the Phoenician ports, anywhere. And slowly—but only slowly—this policy led to disaster. First the enemies of Assyria in Palestine and Phoenicia found that Egypt could not or would not save her allies. Then the Assyrians found that victories in Asia were not enough. They decided that the root of the trouble was Nubian rule and drove the XXVth Dynasty out of Egypt. They did not stay. They had never wanted that. But their garrisons had to be thrown out by some show of force, and the state to which Egypt was now reduced can be judged from the fact that the Saite princes who led the revolt won their victories with Greek and Carian mercenaries. Later, they fought their wars against the Babylonians, when Nebuchadnezzar had wrested an Empire from the Assyrians, with the same troops, and were soundly beaten, both at Carchemish in 605 and in the war for the Arabian trade at the head of the Red Sea. Under this dynasty Egyptian art and literature flourished, a novel adaptation of old forms to new times; but no effort was made to produce a national movement, and there was no pretence that the royal army was much else than an instrument of oppression. Egypt had ceased to be a nation; it had become a magnificent farm.

Such, then, was the decline. The people that had once controlled the trade that came to their land had now been controlled from Libya, from Nubia and from Asia. By the end of the 6th century they had become part of the Persian Empire, which ultimately reached from the Black Sea coasts to the Sudan and from Ionia to Sind. Now and then the presence of Greek mercenaries encouraged a flicker of rebellion; sometimes the Greeks for their own purposes fought the Persians in Egypt. There was no reaction from the mass of Egyptians. Finally the



British Museum

"Egypt during those periods controlled part or all of the Phoenician coast and at the same time the main road from Egypt through the desert to Gaza": men from Palestine and the Phoenician coast bringing tribute to Egypt, as represented in a wall-painting before 1400 B.C.

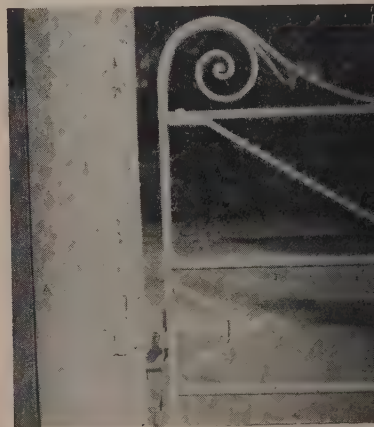
Macedonians came, and so the last turn of the screw was applied. An able follower of Alexander saw in this easily defensible land, with all the requisite administrative machinery of a sound business, a firm basis for the establishment of a dynasty. So all Egypt became what, in times of weak central control, the individual nomes had been, an excellent private estate. The Ptolemies resided in their Greek city, Alexandria, surrounded by works of Greek artists with a magnificent library of Greek books, and fought their wars in the Greek style. The Egyptians slaved on the farms, rejoiced in the permission to use their own language, worship their own gods in temples that proclaimed the foreign rulers to be the true successors of the old Pharaohs—and enjoyed as best they could a peaceful and well-fed, if dependent and laborious, existence.

In the social and economic causes of the rise and prolonged decline of Egyptian civilization geographical conditions and human biology played equal parts. History in this land is the record of a struggle between energy and inertia. Inertia won. But energy created for short spells a civilization which achieved enduring glory.



ENGLISH GATE LATCHES

PHOTOGRAPHS BY E. M. MARTIN





George Crabbe and Suffolk

by CHARLES TENNYSON, C.M.G.

GEORGE CRABBE is the most unreasonably neglected of British poets, just as, until lately, his native Suffolk was the most unreasonably neglected of English counties. Perhaps the reasons are the same in both cases. Both the poet and the county are level, honest, utilitarian. Suffolk can boast only one hill over 400 feet high and Crabbe wrote almost his entire works in the rhyming couplet and often in a singularly matter-of-fact and pedestrian style. Suffolk rivers move slowly and circuitously to the sea, as do Crabbe's tales towards their conclusion. Suffolk has no forests—Crabbe no mysteries. The Suffolk sea is grey and harsh as the poet's outlook—though, like it, visited now and then with moods of divine serenity. Both are honest, simple, rather forbidding to strangers, with nothing specious or showy about them.

It is most fitting, therefore, that Crabbe should be the poet of Suffolk, where he was born, spent his childhood and youth: in all, forty-one years of his life.

Crabbe was born in 1754 at Aldeburgh, where his father held a small post in the Customs. He early showed signs of unusual ability and was sent to school, first at Bungay, then at Stowmarket. When he was fourteen years old it was decided that he should take up medicine as a profession and he was apprenticed, first to an apothecary in the little village of Wickham Brook, in the extreme west of the county, and afterwards to a more important practitioner at Woodbridge. While here he first met Sarah Elmy of Beccles, who was staying with her uncle, a large farmer of Ducking Hall, Parham, about eight miles away, on the site of what is now Parham New Hall. This was the beginning of a courtship prolonged by hard necessity over eleven years and ended by marriage in 1783.

During these years the poet went through much sorrow. His family fell on evil days and he had to give up for a time the idea of becoming a doctor and toil as a common porter on Slaughden Quay, a mile south of his native city, then a busy and thriving port, but now almost entirely devoted to yachting, yacht-building and fishing. At last he was enabled, by the help of Dudley Long, Squire of Saxmundham, to go up to London to seek his fortune. There, when on the brink of starva-

tion, he was befriended by Edmund Burke, who arranged for his first volume to be published and helped him to take Holy Orders. In 1782 he was for a short time Curate at Aldeburgh; then he left Suffolk till 1792, when he went for a short time to live at Ducking Hall, after which he was Curate of the adjoining parishes of Rendham and Sweffling, between Framlingham and Saxmundham, just south of that bleak little plateau which is bounded on the north by the valley of the Yox. He lived first in a fine Jacobean Hall at Great Glemham (now entirely destroyed)—more loved by the poet than any of his other homes. This is how his son described it: "A small well-wooded park occupied the whole mouth of the glen. . . . In the lowest ground stood the commodious mansion: the approach wound down through a plantation on the eminence in front. The opposite hills rose at the back of it, rich and varied with trees and shrubs scattered irregularly; under this southern hill ran a brook, and on the banks above it were spots of great natural beauty, crowned by white-thorn and oak. Here the purple scented violet perfumed the air, and in one place coloured the ground. On the left of the front, in the narrower portion of the glen, was the village; on the right, a confined view of richly wooded fields. In fact the whole parish and neighbourhood resemble a combination of groves, interspersed with fields cultivated like gardens, and intersected with those green dry lanes which tempt the walker in, all weathers." It was a grief to the family when they had to leave Great Glemham for a smaller and humbler house, which is still standing, about half a mile east of Rendham. This proved to be his last home in Suffolk, for to his great regret he had to leave the county for good in 1805.

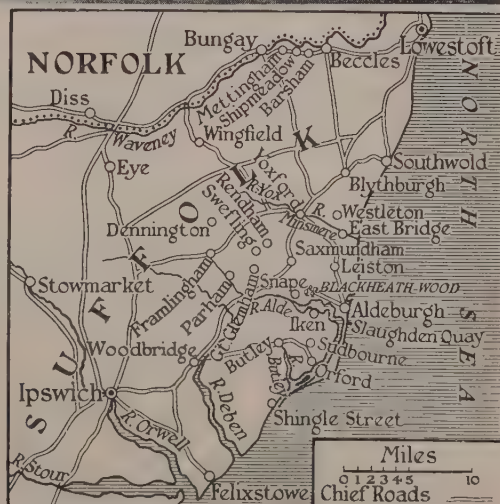
It will be seen that circumstances led Crabbe into every part of his native county, and its scenery and characteristics permeate the considerable volume of his works. But he recurs most often to the long succession of heaths, rivers and marshes which stretch along the coast from Woodbridge and the Deben, up to Beccles and the Waveney, and to the grey cold sea which continually batters and erodes the shore—for it is here that his early and most formative years were spent.



Jarrollds

The 'Town Steps' at Aldeburgh, looking towards the sea. In the distance on the right is one of the old look-out towers on the beach, from which the fishermen used to watch for shoaling fish or wrecks

He suffered much in those early days at Aldeburgh and saw and heard of many cruel and tragic events on sea and river. It is not surprising, therefore, that the picture which he gives is often a grim one. For example, the holiday-maker with pleasant memories of Aldeburgh golf course, set on its high moorland overlooking the Alde, will hardly recognize the following impression — which



Stanford, London



British Council

F. A. Girling



High tide on the river Alde, near Iken. At low tide the river is only a narrow ditch between mud-banks. The barge in the foreground has probably sailed up from London.

F. A. Girling



The Quay at Woodbridge. Once like Aldeburgh, it was a busy inland port and centre of distribution for South East Suffolk. Barges and yachts still give the little port life and purpose



F. A. Girling

(Left) *The Keep at Orford, the little medieval town on the Alde, whither the boy Crabbe made many a pleasure trip from his native town six miles up the river.* (Right) *The old church and campanile at Beccles, where Sarah Elmy lived. It was to Beccles that Crabbe used to ride from Blythburgh, on his twenty-three-mile 'lover's journey'*

yet was probably true enough in the poet's day:

Lo! where the heath, with withering brake grown
o'er,

Lends the light turf that warms the neighbouring
poor;

From thence a length of burning sand appears,
Where the thin harvest waves its wither'd ears;
Rank weeds, that every art and care defy,
Reign o'er the land, and rob the blighted rye:
There thistles stretch their prickly arms afar,
And to the ragged infant threaten war;
There poppies, nodding, mock the hope of toil
There the blue bugloss paints the sterile soil;
Hardy and high, above the slender sheaf,
The slimy mallow waves her silky leaf;
O'er the young shoot the charlock throws a shade,
And clasping tares cling round the sickly blade.

When Crabbe chose he could paint a very different picture—though often enough even his pleasant pictures are painted for the purpose of tragic contrast. Take, for example, these lines in which he describes the condemned felon dreaming, on the night before his execution, of the walks which he used to take with his sweetheart about these same heaths in the days of his boyish innocence:

They feel the calm delight, and thus proceed
Through the green lane,—then linger in the mead—
Stray o'er the heath in all its purple bloom,—
And pluck the blossom where the wild bees hum,
Then through the broomy bound with ease they
pass,

And press the sandy sheep-walk's slender grass,

Where dwarfish flowers among the gorse are spread,
And the lamb browses by the linnet's bed;
Then 'cross the bounding brook they make their way
O'er its rough bridge—and there behold the bay!

The Alde, where Crabbe worked as a porter and swam and sailed as a boy, is continually in his mind, and there are few more interesting rivers in England. It is tidal for nearly twenty miles—from its mouth at Shingle Street to the fine old Malting at Snape Bridge. From the latter point it runs due east to Slaughden, where, within a few yards of the sea, it turns at right angles, due south, and flows for twelve miles parallel with the shore and only separated from the sea by a high bank of shingle varying in width from a few yards to half a mile. On its west side is a stretch of marshland, broken only by the ancient medieval town of Orford, with its Norman church and keep, by the inflowing of its tributary, the Butley River, and by an occasional spur of the low hills over which spread Butley, Sudbourne and Iken heaths. At high tide the river swells in its upper reaches to a great sheet of water a mile wide. At low tide it diminishes to a trickle between high mud-banks. It is a favourite haunt of wild-fowl of all kinds, and such rare birds as the bittern and osprey are seen there from time to time, while it still yields good sport both to net and line. But with all this life and movement it is a grim river, except in the



F. A. Girling

A subject for Mr Gainsborough of Sudbury. Part of Tangham Forest, on the great stretch of sandy heath that extends from the Deben to the marshes of the Upper Alde

reach immediately below Snape, where on the south side Iken church stands dreaming on a green and well-timbered headland, which juts out into the stream, and on the north Blackheath Mansion nestles in its heron-haunted woods of fir, elm and beech.

It is no wonder that all Crabbe's pictures of the Alde have a singular vitality. They are also scientifically precise, for the poet was a first-rate botanist and a keen observer of bird and animal life:

With ceaseless motion comes and goes the tide,
Flowing, it fills the channel vast and wide;
Then back to sea, with strong majestic sweep
It rolls, in ebb yet terrible and deep;
Here Samphire-banks and Salt-wort bound the
flood,
There stakes and sea-weeds withering on the mud;
And higher up, a ridge of all things base,
Which some strong tide has roll'd upon the place:

and how brilliantly he can use the river's moods to enforce the atmosphere of his story, as in the dreadful tale of Peter Grimes, the brutal fisherman, suspected of murdering his apprentice:

When tides were neap, and, in the sultry day,
Through the tall bounding mud-banks made their
way,
Which on each side rose swelling, and below
The dark warm flood ran silently and slow;

There anchoring, Peter chose from man to hide,
There hang his head, and view the lazy tide
In its hot slimy channel slowly glide;
Where the small eels that left the deeper way
For the warm shore, within the shallows play;
Where gaping muscles, left upon the mud,
Slope their slow passage to the fallen flood;—
Here dull and hopeless he'd lie down and trace
How sidelong crabs had scrawl'd their crooked

race,
Or sadly listen to the tuneless cry
Of fishing gull or clanging golden-eye;
What time the sea-birds to the marsh would come,
And the loud bittern, from the bull-rush home,
Gave from the salt ditch side the bellowing boom:
He nursed the feelings these dull scenes produce,
And loved to stop beside the opening sluice;
Where the small stream, confined in narrow bound,
Ran with a dull, unvaried, sadd'ning sound;
Where all, presented to the eye or ear,
Oppress'd the soul with misery, grief, and fear.

In the same way he casts a gloom over one of my favourite places of pilgrimage, 'Little Japan', on the 'Mansion reach', where the high left bank, crowned with fir trees, looks south over one of the broadest stretches of the river and over Blackheath woods and house to the west, while far away to the east can be seen the outskirts of Aldeburgh and Slaughden Quay.

To Henry, the despondent lover, standing on the fir-crowned hill in early autumn, the



F. A. Garling

Coast erosion at deserted Covehithe, between Southwold and Beccles. The ruins of the huge church, a quarter of a mile from the shore, show that this was once an important and populous settlement

scene, visited with delight in happier days,
serves only to increase his despondency:

But now dejected, languid, listless, low,
He saw the wind upon the water blow,
And the cold stream curl'd onwards as the gale
From the pine-hill blew harshly down the dale.

Far to the left he saw the huts of men,
Half hid in mist that hung upon the fen;
Before him swallows, gathering for the sea,
Took their short flights, and twitter'd on the lea:
And near the bean-sheaf stood, the harvest done,
And slowly blacken'd in the sickly sun.

Even nearer than the river to the young
poet was the grey North Sea, which rolled
almost to the door of his father's cottage and
has since rolled over it and over many another
house and garden on that shifting coast.
Crabbe is never tired of describing that grey
sea, so beloved of Edward FitzGerald. He
pictures it in every mood. In calm and sun-
shine:

Be it the summer-noon: a sandy space
The ebbing tide has left upon its place;
Then just the hot and stony beach above,
Light twinkling streams in bright confusion move;
Then the broad bosom of the ocean keeps
An equal motion; swelling as it sleeps,
Then slowly sinking; curling to the strand,
Faint, lazy waves o'ercreep the rigid sand,

Or tap the tarry boat with gentle blow,
And back return in silence, smooth and slow.

In storm, as he so often saw it when the wives,
daughters and sweethearts of the fishermen
gathered in terrible anxiety on the beach,
waiting for news of their men folk, caught out
at sea by the squall in their flat-bottomed
sailing-boats:

All where the eye delights, yet dreads, to roam,
The breaking billows cast the flying foam
Upon the billows rising—all the deep
Is restless change; the waves so swell'd and steep,
Breaking and sinking, and the sunken swells,
Nor one, one moment, in its station dwells:
But nearer land you may the billows trace,
As if contending in their watery chase;
May watch the mightiest till the shoal they reach,
Then break and hurry to their utmost stretch;
Curl'd as they come, they strike with furious force,
And then re-flowing, take their grating course,
Raking the rounded flints, which ages past
Roll'd by their rage, and shall to ages last.

Even then he has an eye for the wild life
which was such a delight to him:

High o'er the restless deep, above the reach
Of gunner's hope, vast flights of Wild-ducks
stretch;

Far as the eye can glance on either side,
In a broad space and level line they glide;
All in their wedge-like figures from the north,
Day after day, flight after flight, go forth.

How admirable, too, is the description of a fog, as it appears to a watcher on the flat Aldeburgh shore:

The ocean too has Winter views serene,
When all you see through densest fog is seen;
When you can hear the fishers near at hand
Distinctly speak, yet see not where they stand;
Or sometimes them and not their boat discern,
Or half conceal'd some figure at the stern;
The view's all bounded, and from side to side
Your utmost prospect but a few ells wide;
Boys who, on shore, to sea the pebble cast,
Will hear it strike against the viewless mast;
While the stern boatman growls his fierce disdain,
At whom he knows not, whom he threatens in vain.

But it is not only in these large-scale pictures that Crabbe's Suffolk lives for us. There are innumerable thumbnail sketches—of the moated Jacobean Halls, buried up to their turrets in the tree-tops of their overgrown parks; of Abbey ruins almost merged in some solitary copse or pasture; of the ruffed and painted lords and ladies stretched on their tombs in the Parish Church, as at Framlingham, Dennington and Wingfield:

Mangled and wounded in their war with time;
of the little seaside cottage—

Yon tenement apart and small
Where the wet pebbles shine upon the wall:
Where the low benches lean beside the door
And the red paling bounds the space before;

of the poor oyster-dredger on the chill rough river, who

Cold and wet and driving with the tide
Beats his weak arms against his tarry side,
Then drains the remnant of diluted gin
To aid the warmth that languishes within;

of the busy Quay where amid "Package, and parcel, hogshead, chest and case"

the loud seaman and the angry hind
Mingling in business, bellow to the wind,

while the "half naked sea-boys" dabble on the shore exulting in the turmoil, and in the shipyard hard by, where the planks "curve and crackle in the smoke" and the air all about is filled with "the warm pungence of o'erboiling tar."

One of his cleverest sketches describes a hopeful lover's ride from Aldeburgh to Beccles to see his sweetheart—no doubt a ride which Crabbe himself had taken many times for a similar purpose. No names are men-

tioned, but almost every mile of the ride is clearly identifiable. First, over "the barren heath" (the eastern edge of Leiston heath above the marsh), then through "lanes of burning sand", then across "a common pasture wild and wide" (Leiston Common) grazed by small blackfaced sheep "fleshless, lank and lean." Then across the western edge of Minsmere marsh through East Bridge where

Far on the right the distant sea is seen,
And salt the springs that feed the marsh between:
Beneath an ancient bridge, the straiten'd flood
Rolls thro' its sloping banks of slimy mud;

and so on through the sandy lanes to Westleton and Blythburgh, whence the main road would carry the rider to Beccles. So far the ride, in spite of the heat and dust and the barrenness of the prospect, is all delight to the young man, buoyed up by the prospect of seeing his beloved Laura. But, alas! when he reaches the town he finds her gone to visit a friend. Tortured by disappointment and jealousy ("means she to a *female* friend?"), he sets out along the lovely valley of the Waveney, through Barsham, Shipmeadow and Mettingham, where

The road, now near, now distant, winding led
By lovely meadows which the water fed,

by rural mansions

With hedge-row trees and hills high crowned with wood,
And many a devious stream that reach'd the nobler flood.

But now all is stale and unprofitable. He hates the long green lanes:

There's nothing seen
In this vile country but eternal green—
Woods! Waters! Meadows! will they never end?
'Tis a vile prospect:—Gone to see a friend!

However, all ends happily—Laura and her friends are kind. The lover stays a night with them and the next day he rides back to Beccles with her in a state of trance in which the eye "roved o'er the fleeting views" without so much as seeing them. If the ghost of old George Crabbe, sometime Curate of Rendham and Swefling, still roams the banks of Alde and Waveney with his faithful Sarah, may it be in such a state of ecstasy.



The Birth of a Volcano

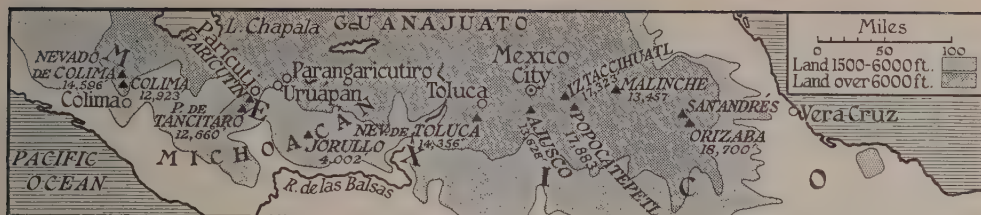
by T. IFOR REES, C.M.G.

To few people has it been given to witness the birth of a volcano, and to fewer still to witness such a phenomenon on their own property. This probably unique experience fell to the lot of a humble Tarascan Indian peasant, named Dionisio Pulido, a native of Parícuti, a little village in the state of Michoacán, Mexico, about 20 miles, as the crow flies, west of the pleasant town of Uruápan (well known to tourists and celebrated for its lacquer ware).

Late in the afternoon of February 20, 1943, Dionisio, who had been busy all day plough-

ing his plot of land in a secluded valley or basin known as Cuiyútziro, less than a mile from the village, saw a sight that he will never forget. Here (in translation) is his own description of it: "It was Saturday afternoon, and the shadows were lengthening; I had just unyoked the oxen from the plough with which I had been turning over the soil of my little plot, and was about to start homewards, when from between the furrows I saw a snake-like column of white smoke arise; then another, and yet another, and then many more. Cracks began to appear in the soil, and from





Stanford, London

below came a horrid noise. I left everything and fled. Having gone some distance, I looked back and saw a huge column of black smoke roll upwards."

The new-born volcano showed great activity from the very beginning, and in a few days had attained a height of about 150 feet above the level of the field where it had burst forth. This field itself is approximately 7700 feet above sea-level. As the volcano grew, its activity grew also. It erupted, and continues to erupt, masses of incandescent material as well as vast quantities of sand. There appear to be three chimneys within the crater, all going full blast, so that there is practically no pause in the ejection of material. There is a constant roar which, from a distance, sounds like a waterfall. Most of the incandescent stuff is thrown out on the east, or north-east side, where the rim of the crater is lowest, and the lava mass thus formed has slowly gravitated round to the north side of the volcano. It has already reached the mouth of the dell leading to the village of Parícuti, and if its progress continues down this dell for another quarter of a mile, the village, already half smothered in sand, is doomed.

The volcano, which has been christened Parícutín after the village which it threatens to destroy, is, as I write, about eight weeks old, and has attained a height of roughly 800 feet. According to the calculations of engineers and geologists, it is ejecting over ten million tons daily. The countryside for many miles around, particularly to the north and east, is covered by a thick layer of sand which,

The volcano of Parícutín from the north at a distance of about a mile and a half. The little village of Parícuti, after which it was called, lies among the trees on the right



Stanford, London

in the vicinity of the volcano, lies at least a foot deep over the farm lands of the inhabitants of Parícuti and of the nearby larger village of Parangaricutiro—affecting in all a population of about 4000. These lands are ruined for years to come, even were the volcano to cease activity now, so that the prospect before these poor people is certainly a gloomy one. To make matters worse, their forestry activities have also been affected by the volcano. There are extensive pine forests in this region, and the tapping of the trees for resin is a source of livelihood to many of the local inhabitants. This livelihood is being destroyed by the sand from the volcano, for the cups attached to the tapped tree-trunks get filled with grit.

Fine dust has been carried by the air currents as far as Mexico City, about 200 miles away to the east in a direct air line, but in general the sand-laden clouds of smoke go north-north-east, depositing sandy dust over northern Michoacán and the state of Guanajuato.

Both by day and by night Parícutín is a magnificent spectacle. By day the dense volumes of smoke pour upwards in rolling, swirling, revolving masses to a height of about



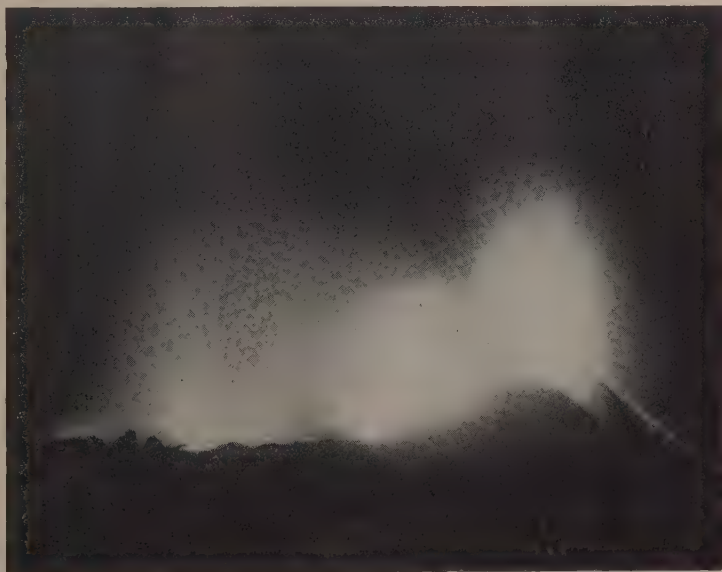
3000 feet, where they meet air currents which carry them away to the north and east. These billowy fleece-like masses, as they swirl powerfully out of the crater, range in colour from white to black, with every shade of grey in between. Occasionally there is an electrical discharge within the huge pillar of smoke, followed by a thunderclap. By night, when the columns of smoke are not visible, the volcano is like an enormous blast-furnace, hurling into the air vast quantities of incandescent material which falls in a glowing shower on the slopes, covering them with a shimmering and ever-changing mantle of fire as the flaming rocks roll down.

This part of Michoacán is all volcanic, and dotted with extinct volcanic cones, each in its day a 'Paricutín'. Dominating them is the towering peak of Tancitaro, an extinct volcano, 12,660 feet high—the highest summit in the state. The abundance of small cones, varying in height from about 500 to 1000 feet, leads geologists and volcanologists in this part of the world to conclude that Paricutín is not likely to continue active for very long, at any rate on its present scale. Its birth and activities have naturally recalled those of the

volcano Jorullo, which came into existence in 1759, in this same state of Michoacán, in the region to the south-east of Uruápan. This volcano, after several months of much subterranean rumbling, burst forth in a small gorge on a fine estate known as Jorullo (Tarascan for Paradise) and completely destroyed the estate as well as much other property in the region. It continued active for several years, though not on the scale of its initial activity, and attained an altitude of about 1230 feet before its growth ceased.

This Michoacán area would appear to be the weakest spot in the great geological fault which stretches across south central Mexico from the Gulf to the Pacific Coast. Many great volcanoes are found in this belt—Citlaltetpetl, or the Peak of Orizaba, the highest mountain in Mexico (18,700 feet), Malinche, Popocatepetl, Iztaccihuatl, Ajusco, the Nevado de Toluca, the Volcano of San Andrés, Tancitaro, the Nevado de Colima, the Volcano of Colima. It is therefore not surprising in this zone that, when there are disturbances 'down below', the pent-up forces striving for an outlet find a relatively easy way to the surface.

(Opposite) *The volcano from the east, with the lava flow in the foreground. The trunks of the trees had already been set on fire when this photograph was taken.*
 (Right) *A night view taken on March 2, 1943. The dark mass of the lava flow can be seen in the foreground. As the mass moved, chunks of partly cooled crust fell down with a great clatter, and momentarily revealed inner fires. These are the 'glow spots' in the photograph*



Photographs by the author



Work and Wealth of Madagascar

by A. M. CHIRGWIN, D.D.

My previous article on Madagascar appeared in The Geographical Magazine in August 1942, shortly after British troops landed there. Since that time the island has come under the control of the Free French, and life has become fairly normal again.

The central plateau of Madagascar consists of well-cultivated rice-fields in the river valleys and rolling bare hills. The villages nestle comfortably among tall eucalyptus trees. The country is so well-watered and the soil so naturally fertile that food shortage is rare and famine unknown, save in the wake of a destructive cyclone.

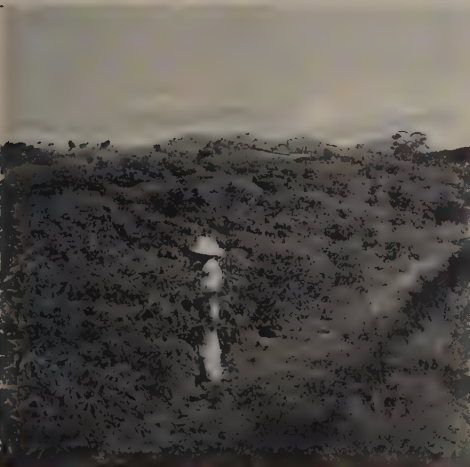
Rice is both the staple food and the chief export. The seed is usually sown in a sunny plot and when the young shoots are a few inches above the ground they are transplanted into the larger space of the rice-field, where the soil has been turned over, well trodden by oxen, and flooded with a foot or so of standing water. The transplanting is mostly done by women who, almost knee-deep in muddy water, push the young plants into the deep, soft mud. A quick worker will often deal with over 150 plants in a minute. The crop grows and ripens with great speed, and when it has been harvested the husking





Photographs from the Ministry of Information

is done by pounding the rice in a rough wooden mortar. In recent years, however, a few mills have been opened from which the rice is taken in ox-carts to the coast for export. In the little Malagasy fields the turning of the soil is still done by hand and the long-handled spade is the only implement used; but now that Europeans are developing agriculture a larger use is being made of oxen for ploughing and harrowing as well as transport, and crops for export, such as manioc (tapioca) and maize, are increasingly grown. The pictures on this page show these crops being tended.





The mineral wealth of Madagascar has not only never been adequately developed, it has scarcely been surveyed. Iron, copper, lead, silver and gold are known to exist; indeed for many years they have been mined but mostly on a small scale. Iron-ore in particular exists in abundance, and has been worked from primitive times. In recent years modern methods of smelting and working iron have been introduced and the Malagasy have shown considerable aptitude for skilled industrial work.



They are clever with their hands and soon become good craftsmen and mechanics. For a long time nothing was done, except in a few mission schools, to give industrial training, but today many of the government schools in the larger towns have good handicraft and industrial departments. The Malagasy have been spoken of as the artists of the southern hemisphere, and their artistic ability together with their newly awakened machine-sense should enable them to reach a high level of craftsmanship.

The earliest missionaries, some of whom were skilled artisans, finding that Madagascar was peculiarly suited to cattle-raising, introduced tanning, which quickly grew to be one of the chief industries of the island. It is claimed that there are more oxen per head of the population in Madagascar than in any other country in the world. And since the Malagasy ox reaches a good size, its hide is valuable, and the tanning and export of hides has grown to be a very profitable industry. Up till the beginning of the war hides were exported to France to the annual value of many millions of francs.

The great herds of Malagasy cattle have also made possible the development of the meat-canning industry. Madagascar is the normal source of supply of the 'bully-beef' of the French army. In view of the fact that for two years from the collapse of France there was a close blockade of the island vast stores of canned meat, rice, hides and other goods have probably been accumulated and are awaiting export.





Graphite abounds in the island. Where the heavy downpour of the rainy season has washed away the soil from the hillside, seams of it can often be seen and on a sunny day the shallow beds of rivers often gleam and glitter with the myriad minute deposits of mica and graphite. At one time large quantities of graphite were exported, but for some reason the amount has dropped considerably in recent years.



Hat and mat making are old-established crafts of the Malagasy. The hats are made of rush and sedge, but those that are intended for export are made of finer materials and have the qualities of a 'Panama'. Many thousands are normally sold on the European market every year. In mat-making the Malagasy have few rivals. Some of their mats are as soft and pliant as cloth, and now that imported cloth is unobtainable the Malagasy have been forced to make their clothes out of raffia grass and similar home-grown materials. They grow a certain amount of coarse cotton and produce a little silk, but in both cases it is on a small scale.

There is one garment which for generations they have been accustomed to weave in their own homes, namely the famous lamba or distinctive national dress of the Malagasy. It is a kind of shawl, generally white or cream-coloured and worn close up to the throat. For special and festive occasions a coloured lamba is worn, the colour and pattern of which differ from tribe to tribe, like the tartans of Scottish clans. These coloured lamba are often presented to parents by their children as a token of respect, and are eventually used as shrouds.



The Tribute of the Three Cows

by RODNEY GALLOP

SUMMER comes late to the Pyrenean heights on the Franco-Spanish frontier. Only at the end of June do melting snows open the highest passes and allow the sheep and cattle to make their slow way upwards to the mountain pastures where for a few short weeks they crop the fresh, springy turf before escaping to the foothills from the first snowfalls of approaching winter.

Lying abed on hot June nights in Pyrenean valleys you may hear the herds come jangling through with the "rough music" of their bells of every size and pitch, cacophonous at first, but seeming through its insistent repetition to take on a purposeful rhythm and melody. This music is the *leit-motiv* of a tradition as old in these wild valleys as man himself, the tradition of the herdsman who first broke with the nomad life of the hunter and paved the way to settled agricultural life.

Today shepherds and herdsmen still pursue their avocations unperturbed by outside events as they did when Romans and Moors passed that way, living out their lives to the rhythm of the seasons, guided by rules and customs as immutable as the rugged peaks of Anie and Midi. Artificial borders drawn to suit the whims of tyrants and warring factions mean little to them, and all along the frontier their relations are governed by local agreements known as *faceries*, dating from the Middle Ages and maintained in undiminished vigour by the good faith and good sense of those whose ancestors first set their seal on them.

It was therefore with no surprise that many years ago I first heard of the Tribute of the Three Cows which, in virtue of a treaty concluded in 1375, the inhabitants of the French valley of Barétous in Bearn pay annually on July 13 to those of the Spanish Basque valley of Roncal in Navarre.

It was not till 1939 that I was able to be at the right place at the right time and thus to attend the 564th celebration of a custom which must be unique in modern Europe. The *pie dra de San Martín*, where the tribute is paid over, is a remote and inaccessible spot on the very frontier, 6000 feet above the sea to the west of the Pic d'Anie. The nearest

sleeping-place is Ste Engrâce, the last Basque village, 3000 feet above sea-level in a gloomy amphitheatre of mountains. Here we spent the night with the innkeeper, Monsieur Hondagneu, who was our guide at dawn next day on the steep, rough climb to the meeting-place.

It was an unpropitious morning. There had been heavy rain in the night, and, although it was no longer falling, clouds hugged the hills. Striking steeply up a mountain-side clothed in dense forests of beech and chestnut, we were soon wrapped in mist. We were a numerous party, lithe Basques in berets and espadrilles setting a gruelling pace to those others who, like ourselves, had been drawn by historical curiosity from further and flatter lands. Misty figures flitted before us, and we could divine the turns in the path ahead from scraps of Basque song which came floating down together with fragments of talk in that ancient, sonorous tongue, and the weird, laughing, neighing, prehistoric cat-call of the *irrintzina*.

After two hours of steady climbing we reached the tree-line, and almost immediately the clouds began to lift. In a few minutes they had fallen like a discarded cloak at our feet, and over the fleecy sea we could look westwards along the jagged line of summits to the Pic d'Orhy. Far away to the left a straggling line of figures were those who had chosen the longer but less arduous route from Arette, the chief village of Barétous.

A little before nine we converged at the appointed spot. St Martin's stone proved to be nothing more exciting than a frontier stone like any other. There was no sign of the Spaniards as yet, so we crossed a few hundred yards into Spain, trusting that the absence of passports would not be taken amiss. The change of landscape was almost startling. Where there had been beech forests and green sward we now looked out over an arid waste of rock, flecked with snow and cross-hatched with a few scattered firs. Hull-down over the rugged uplands rose the triangular Pic d'Anie, westernmost of the Pyrenean giants. At our feet lay a little

*Only in midsummer
are the highest Pyre-
nean passes open,
while the snow hangs
on the southern slopes
of the Pic du Midi
d'Ossau, seen from
the Col du Pourtalet*



All photographs are by the author

*The Pyrenean sheep
and cattle make their
way upwards to the
mountain pastures to
crop the fresh, springy
turf for a few short
weeks before the first
snowfalls of winter*



*Above the tree-line
the clouds fall away
like a discarded cloak
and over the fleecy sea
one looks westward
along the line of sum-
mits to the Pic d'Orhy,
seen behind on the right*





Beyond the Spanish frontier the landscape changes abruptly to an arid waste of rock, flecked with snow and cross-hatched with scattered firs, rising to the triangular Pic d'Anie

gully from which a path led over a shoulder and out of sight. Even as we watched, this path suddenly came alive. Little brown figures crawled over the shoulder and strung themselves ant-like down the trail. The Spaniards were arriving.

It was not long before they reached the frontier and, after an exchange of greetings, the ceremonies began under the direction of the *Alcalde* (Mayor) of Isaba who, for the occasion, had put on his traditional hat and robes of office. At his order the delegates of each party took up position, each on his own side of the frontier stone. Then, in a loud voice, the Mayor addressed the French representatives.

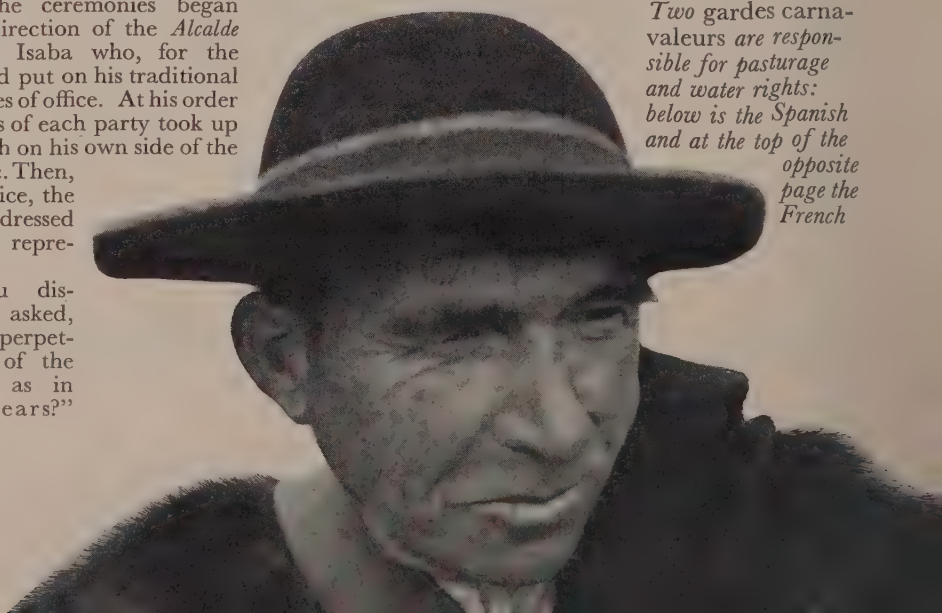
"Are you disposed," he asked, "to pay the perpetual tribute of the three cows as in previous years?"

160

This question he repeated three times, and thrice the answer came: "We are."

There now followed the most curious moment of the whole ceremony. The chief French representative laid his right hand on the frontier stone, and over it one of the Spaniards placed his own. The other dele-

Two gardes carnavaleurs are responsible for pasturage and water rights: below is the Spanish and at the top of the opposite page the French



gates followed suit, a Spanish hand always superimposed on a French, that of the Alcalde crowning the pile. Then the last-named pronounced three times the mystic words *Paz Aban*, which were interpreted to me as meaning "Peace henceforward". Next he called upon any of those present who might have any claim or complaint to come forward. There was no response, and he was able to proceed to the swearing-in of the two *gardes carnavales* who were responsible during the coming year for the respect of all rights of pasturage and water. To his question whether they swore to fulfil their charge faithfully each in turn replied, "I do."

Meanwhile the Spaniards were choosing from a little knot of heifers the three which they would accept as tribute. The choice once made, however, they did not drive them over the frontier but sold them back to their French owners, a mercenary innovation of later days. This concluded, they invited us all across the border into the gully where a lamb was being roasted whole on a spit, and leather wineskins were circulating with the strong, red wine of Rioja. Here, the serious business of the day completed, we remained in international amity until it was time to cross back into France and drop down through the rain-soaked forest to Ste. Engrâce.

What is the origin of this remarkable tribute? My inquiries in and around Barétous enabled me to piece the story together. At Arette I was able to see and photograph the famous treaty of 1375 which is preserved in the village records. But the treaty merely carries the story further back, for it does no more than confirm that "the inhabitants of the valley of Barétous have been from all time

in the habit and custom of presenting three two-year-old female heifers to the inhabitants of the Valley of Isaba (Roncal) each year on the fourth day after the Feast of the Seven Brother Martyrs and to hand them over to the said inhabitants on the limits of their territories".

"From all time!" According to a pamphlet published in Madrid in 1881 the matter goes back to an invasion by Cimbrian tribes from North Germany in 125 B.C. The 16th-century Basque historian Garibay more modestly traces it back to the 9th century, but all that can be stated with any certainty is that its origins must be sought in the disturbed conditions which prevailed on the frontier in the Dark and Early Middle Ages.

Of these times I was able to pick up in Barétous a legendary echo, obscure and fragmentary. One day, while celebrating Mass, the Curé of Isor saw a drop of blood fall suddenly upon the missal. Interpreting this as an omen that the Spaniards were invading the valley, he called his parishioners to arms and sent them up into the mountains to repel the invader. Before them went a woman



(Below) From a little knot of heifers the Spaniards single out the three claimed as tribute. (Right) Hand over hand, the French and Spanish representatives swear on St Martin's stone to maintain peace for the coming year





who hit upon the stratagem of stripping off her clothes, covering her body with honey and rolling in a bed of feathers so that she assumed the appearance of a strange bird. Presenting herself thus to the Spaniards, she so provoked their terror of the supernatural that they all fell to their knees and in this position were surprised by the French, who slaughtered them to a man. Some say that it was this very incident which gave rise to the tribute, but this cannot be established, for it is only in the year 1373 that its recorded history begins.

In this year, according to old documents preserved at Isaba, the traditional payment lapsed owing to a series of frontier incidents. Quarrels between shepherds had culminated in the murder of one Pierre de Sausoler of Barétous by Pedro Carrica of Isaba. The valley notables met at Aramits and despatched a punitive expedition to avenge the victim under the command of his cousin Auginar Sausoler. Seeking the murderer in vain, they found only his wife Antonia, whom they killed, together with her unborn child, in circumstances of great brutality. This so incensed the people of Roncal that they sent out a force under Pedro Carrica which fell upon the Sausoler family at their evening meal. Pedro told Auginar's wife that, though he had her at his mercy, he would spare her life and that of one other whom she might choose. Her choice fell not on her husband but on her brother.

The series of skirmishes which followed forced Carlos II of Navarre and Gaston Phébus of Foix and Béarn to promote an attempt at mediation by four bishops, those of Jaca and Pamplona in Spain and of Bayonne and Oloron in France. Not only was this a failure, but the priests of the two valleys, meeting for three days on the frontier at the very spot where the tribute is now paid, failed to arrange matters.

In the last resort the people of the neighbouring Aragonese valley of Ansó offered their mediation. The names of the judges are still preserved: Sancho García the Mayor, Iñigo Jiménez, Jimeno Robet, Juan López, Sancho Jiménez and Bello Aznarez (a member of the Aznarez family was one of the Roncal delegates in 1939). Conflicting evidence constituted the principal problem. One deposition made before them declared that the tribute of the three heifers "without flaw or blemish" was a reparation for the killing of Roncal men by those of Barétous, while other witnesses held it to be a payment for pasturage rights.

The judges' verdict was that the tribute should continue to be paid, "it being clearly established by the said deposition that the inhabitants of the Valley of Barétous, and in particular those of Arette, were accustomed to be the first to enter into the said places and pasture their flocks and herds each year". So, for the future they were to enjoy the disputed pastures for twenty-eight days from July 14 each year, after which the Spaniards were free to use them till December 25, both parties being required to withdraw from them at night-time. The people of Barétous were to be freed from all further responsibility for past offences. Lastly, the arbitrators imposed "eternal silence" in regard to any other claims and a truce of 101 years. Even they could hardly have anticipated that their decisions would be respected for more than five times that length of time, and that in spite of local troubles which broke out in 1460 and 1642 the terms of their award would be incorporated in every territorial treaty between France and Spain down to that concluded at Bayonne in 1856. Nevertheless, year by year the ceremony sheds some of its more picturesque details. The men of Roncal once came armed to the meeting, and the Sword Dance was performed on the very border. The French laid a lance horizontally on the ground along the frontier while the Spaniards placed one across it, "the point entering French soil for at least eight inches". Finally a Spanish sword was plunged defiantly into French soil and three muskets loaded with blank were fired in the direction of the French, who remained with their standard lowered in sign of homage. It was apparently to soothe French susceptibilities that these details were dropped from the ceremony.

But the people of Barétous have no need to stand on their dignity in this respect. In these days of broken pledges and worthless engagements they still observe to their own disadvantage the terms of a treaty which others less scrupulous would long ago have denounced as unequal and out-of-date.



Cider-Making in the West Country

Notes and Photographs by G. T. Holford .

In spite of the war the West Country farmer still makes his cider his staple drink. Every year the old presses which have sometimes been on the farms for generations are brought into use. There is an art in making farmhouse cider and it varies according to the manner in which it is made. Some is rough and unpalatable, but when really good it has a rare delicacy of flavour with a 'punch' behind it. The picture above is of Broad Hembury, a characteristic Devon village near Honiton in the heart of the West Country cider-making district.



The apples, when ripe, are shaken from the trees or brought down by means of a long, whippy pole. They are gathered up in pails and piled onto a heap, where they remain for about a fortnight, to soften, before being bagged and carted to the presses. The first process in the manufacture of cider is to pass the apples through a mill (shown below), where they are pounded into a pulp. The machine consists of meshed rollers called 'tumblers', onto which the apples are fed through a hopper.





The pulp is known locally as 'muck'. It is shovelled out of the bin and spread over the press in a layer about nine inches deep. Over the pulp a thin layer of straw is placed, overlapping by a foot or so all round. Alternate layers of pulp and straw are added until the pile is three or four feet high. After each layer of pulp is placed, the overlapping ends of the straw are turned up. The completed layer is called a 'cheese'. On completion of the cheese a pressure board is placed on top, and the cheese is reduced to a thickness of about nine inches. The compressed cheese is broken up and built up once more, this time without the straw, and again pressed until dry.





The cider, which is caught in a tub placed under the press, is strained and poured into casks through a large wooden funnel until the cask is full right up to the bung hole. The bung must not be inserted or the cask would burst when fermentation takes place, and the scum would be prevented from escaping. It is essential that the scum should overflow, as it carries with it all the impurities in the cider and oozes out of the bung hole in the form of a yellowish white froth covering the whole of the outside of the cask. When fermentation is at its height, which is indicated when a lighted match placed over the bung hole is extinguished, the cider is drawn off and transferred to a clean cask for storage. It is usual to store the cider in hogsheads (54 gallons) but the bigger the cask the better it keeps. A ton of apples will make about 150 gallons of cider. In the old days it was customary to put a beefsteak into a cask to improve the quality. Nowadays a bottle of whiskey or rum is sometimes added.

A glass of last year's cider sometimes helps along the work.

Cider is made from a variety of apples: the softer the apple the better the yield.

To ensure a good crop it was customary, up to ten years ago, to hold a ceremony known as wassailing the orchards. Shortly after Christmas Day, farmers armed with shotguns would gather together and visit each





orchard in turn. After repeating the following incantation

Wassail—Wassail in our town
 The cup is white, and the ale is brown
 The cup is made of the best clay*
 Come pretty old fellow, I will drink with thee*
 I hope your trees will bear and bow
 Apples, pears and plums I vow
 Hat fulls, cap fulls, three bushel bags full
 All down under all trees
 Hoorah! Hoorah!

* 'thee' and 'clay' rhyme in the local dialect

the farmers would fire their guns at the apple trees, and then drink the health of the orchard in hot cider out of a two-handled mug. The owner of the trees provided the cider in a milk-bucket, with baked apples and toast floating on it. It was said, towards the end of the rounds, that the apples could be seen growing on the trees.



The Structure of the Past

II. The First Civilization in the Middle East

by PROFESSOR V. GORDON CHILDE, D.Litt., D.Sc.

In this second article of our series, Professor Gordon Childe describes the Bronze Age civilization of the Indus Valley, which has only been revealed by excavations during the last twenty years. The great cities and all their wonders, unlike those of Mesopotamia and the Nile, vanished without leaving a trace, but the relics which have now been discovered suggest that many religious and social customs still surviving in India today have their origin in this complex civilization which flourished 5000 years ago



Stanford, London

A CIVILIZATION as old and venerable as the Pyramids, and in its wealth and art the peer of Ancient Egypt, has been rescued from complete oblivion by the excavations of the last twenty years in the Indus valley. For, in contrast to the civilizations of the Tigris-Euphrates and the Nile, it vanished without leaving a trace on the written record of history. Its authors, though fully as literate as the ancient Egyptians and Sumerians, cannot speak to us directly as these can; the brief inscriptions in the Indus script that survive remain undeciphered. The very antiquity of the Indus cities can be established only because their distinctive manufactures were exported to Mesopotamia and have there been dug up in ruins dating from between 2500 and 2100 B.C.

No one can therefore attempt to write the political and social story of the rise and fall of this oldest Middle Eastern civilization in the

style of a Gibbon or a Motley. It is indeed still too early to attempt even to trace by purely archaeological means how the imposing Bronze Age cities grew out of Stone Age villages. A great gulf of centuries separates these civilized townsmen from the savage hunters of the Old Stone Age whose tools may be collected from the ancient gravels on the valley's edge. Digging beneath the cities' streets and houses, excavators have not yet reached older rural villages as they have in Mesopotamia, and only at one site has anything simpler than the mature urban culture been disclosed by sounding the oldest attainable depths. We can only attempt to re-people the ancient streets and houses themselves and to recapture the background from which they sprang.

The lower courses of the Indus and its tributaries traverse a vast torrid alluvial plain. Even in January the midday temperature may reach 80° F. despite occasional frosts at night, while in summer 120° is not

abnormal. Rain seldom falls; apart from the river the plain is an arid desert. Yet large tracts are covered with a jungle of useless scrubby trees whose long roots reach down to the subsoil water far below. On the other hand, the region is exposed to disastrous floods, while the rivers have often changed their courses. From the prominence of jungle animals—tigers, elephants and rhinoceros—in the prehistoric art and from the use of kiln-fired bricks for the cities it has been inferred that the climate of Sind and Punjab in the third millennium B.C. was wetter than today. That may be, but the difference must not be overestimated.

In such an environment the only foundation for civilized human life must be farming based on irrigation. To farmers adequately equipped for its exploitation an alluvial plain offers a rich return. It can be won only by societies strong enough and organized to overcome by cooperative effort the perils of flood and drought. On the Nile and the Euphrates



Stanford, London

The Stupa and mounds at Mohenjo-daro, one of the few sites yet discovered which have revealed an Indus Valley civilization as old and as culturally rich as that of Ancient Egypt. The terracotta figurine on the opposite page shows the elaborate headdress and jewellery of the period



Mrs Mackay



High Commissioner for India



Government of India by permission of Arthur Probsthain

(Above: left) *The Indus plain as it is today*; (right) *Mohenjo-daro before excavations*. (Below) *one of the lanes revealed by digging*; (bottom) *the results of deep diggings; the latest house floors were flush with the top of the well, which is seen standing like a factory chimney*



Government of India by permission of Arthur Probsthain



Professor V. Gordon Childe

it was this same urgent necessity that conferred survival value on economic centralization and the synoecism of villages into cities. The villages that we know in Egypt and Mesopotamia have still to be assumed in the Indus valley; we know only the cities. They are numerous and large—far removed from the hypothetical rural precursors.

In lower Sind, along the Indus between Hyderabad and Sukkur, an area systematically explored by Mr Majumdar who lost his life in the work, six large sites have been identified, two—Chañhu-daro and Mohenjo-daro—partially excavated by Dr Mackay and others. Four hundred miles further north huge mounds at Harappa mark another city site; bricks quarried from the ruins provided balast for a hundred miles of the Karachi-Lahore railway last century, but a good deal remains and has been scientifically examined under Mr Vats.

The sites are marked today by groups of huge mounds, covering a full square mile at Mohenjo-daro and more at Harappa. Excavation reveals blocks of brick houses separated by wide streets and intersected by narrow tortuous alleys. The streets, that may be anything up to thirty-two feet wide, have been laid out on a regular plan, intersecting at right angles and running north-south and east-west. The enormous built-up areas, occupied generally by two-storied houses, convincingly attest the magnitude of the urban population.

The height of the mounds less reliably indicates the long life of the cities. It is due to repeated reconstruction of the buildings in each block. On each occasion the ground-floor walls were left standing five or six feet



High Commissioner for India

The river Indus and, the modern town of Rohri

high and the rooms within them filled up with mud brick or rubbish to that height, above which the new building started. Thus the floor levels at Mohenjo-daro were raised nearly 20 ft. during six architectural phases (three 'Intermediate' and three 'Late'); during 'Early' periods they had been raised perhaps as much above the original ground level that has nowhere been reached by the excavations.

Now the city had been twice washed by the waters of disastrous floods, the second followed, apparently, by a temporary desertion of the site, and similar catastrophes have left traces at other cities. The later buildings were certainly far beyond the reach of any flood. But security from this peril is probably not the reason for the repeated raising of the floor level; actually the flood-laid sediments are found only on low ground outside the built-up areas. Householders were compelled to raise their floors for another reason that will not startle anyone familiar with the East today.

Refuse from the houses gradually choked the narrow lanes between them till the ground-floor rooms became cellars into which you would have to step down from the street. That might happen in modern India, and the appropriate remedy is to fill up the 'cellars' and add a new storey, just as the Bronze Age people apparently did. The visitor to an Indian town today will remember that the blocks of close-built houses seem to stand on little hillocks raised above the level of the larger open spaces.

A curious by-product of these reconstructions must be mentioned to enable the reader

to understand any photograph of the excavations. In each block at Mohenjo-daro one or two wells were sunk to tap the subsoil water. At each reconstruction the well-shaft was naturally raised to the level of the new floor. Modern excavators who have had to clear away later and higher walls to uncover older constructions beneath have nevertheless left the well shafts standing to the topmost ring as permanent marks of the successive building phases. In deeply excavated areas they stand like great factory chimneys towering 20 ft. above the Early walls.

The deliberate town planning revealed by the excavations in itself implies the existence at least of an effective municipal government. The continuity of its authority is indicated by the preservation throughout all rebuilding of the approved plan, save in the last two Late layers. Confirmation is afforded by the magnificent drainage systems in all the cities and by the circumstance that the drains are connected with sumps and cesspits that must have been periodically cleared out, and that naturally by public functionaries.

The analogies of Egypt, Mesopotamia, Crete and China would lead us to infer that, with the still rather inefficient equipment available in the Bronze Age, the real capital, the reserves of foodstuffs requisite to support an elaborate urban civilization and large classes of merchants, artisans and officials who did not grow their own food, could only be collected by a centralized theocratic or despotic government from the cultivators of a large area; only by exacting as tithes or taxes the tiny surpluses over domestic needs producible by each Bronze Age peasant could



Mrs Mackay



High Commissioner for India

an adequate store be concentrated to feed the new classes and pay for imports of indispensable raw materials.

The stupendous tombs of the Pharaohs, for instance, would show, even in default of all literary testimony, how the surplus produce of the Nile valley was concentrated in the hands of a divine monarch under the Old Kingdom. So, too, the vast temple with its staged tower that forms the core of the oldest Sumerian cities would proclaim no less unambiguously how a deity with his human servants, the priestly corporation, concentrated the surplus produced by the Mesopotamian peasantry.

India's oldest architecture does not explicitly tell any similar story. At Harappa the largest building actually exposed is a great granary, covering 168 by 135 ft.—significant enough, of course, as proof of how the urban organism was nourished by the stored surplus sucked in from the countryside. At Mohenjodaro a great bath is the most imposing edifice so far uncovered. Dr Mackay indeed cleared a block covering 220 by 115 ft. and boasting two wells that he identified as a palace. But it differs only in its size and the thickness of its outer walls from a normal private house. No temple has been recognized at any site. So far, then, no one can say with confidence whether an Indus city's government were an autocracy, a theocracy or even peradventure a republic.

Nor can the extent of its authority be deduced from the remains. Was each city an

(Opposite: top) One of the main streets of Mohenjo-daro. The presence of the Sindis of today, with their carts and oxen, gives an idea of its proportions; (below) drain, with corbelled roof, which served the great bath at Mohenjo-daro—the most imposing edifice so far discovered there (Right) Village water wells of primitive type are still used in Sind



High Commissioner for India

autonomous capital or were all incorporated in some large territorial state? At all sites from Chanhudaro to Harappa the architectural remains and smaller relics are remarkably uniform, Sind and the Punjab enjoyed a homogeneous culture. It does not necessarily follow that they were politically united. The culture of contemporary Sumer was just as uniform; but written texts reveal that there each city aspired to autonomy and was often at war with its neighbours save when one, stronger than the rest, forcibly imposed internal peace for a time.

Now no fortifications have been found round any of the major cities though Dr Mackay believes that a chain of mounds well outside the residential area at Mohenjo-daro may prove to mark the line of a circuit wall. On the other hand, near the Baluchistan frontier, Mr Majumdar has discovered a small settlement commanding a frequented pass that seems to be defended by a stone rampart. It looks like a frontier post, perhaps one link in a system guarding a single oasis of peace that embraced the whole valley.

Within the older levels of the cities excavators have failed to find those evidences of hostile pillage that scar the ruins of Mesopotamian cities, confirming archaeologically the literary tradition. Groups of contorted skeletons, mostly from late levels, are held to show that in the last period the Indus cities were not immune from raids, but the slaughter might have occurred in some outbreak of internal lawlessness.

In general the Indus cities and their contents produce a relatively peaceful impression. Battle scenes were popular in early Mesopotamian art and to a lesser degree in Egyptian art too; Sumerian graves are furnished with a regular armoury of very efficient battle-axes, daggers, spears and arrows. No pictures of warfare survive from the Indus cities; the most warlike weapons are rather clumsy spear-heads, stone mace-heads and very rare dirks.

The houses and their contents illustrate at least a division of the population into economic classes and specialization of labour. Most of the excavated houses are two-storied, flat-roofed structures, covering from 30 by 27 ft. to more than twice that area, provided with bathrooms and generally latrines too; of a distinct harem there is no evidence. Such dwellings might well belong to comfortable merchants; some of the downstairs rooms would do better as warehouses than living-rooms, like the modern Hindu's 'godown'. Some ground-floor apartments may have been shops; a water-seller's shop is particularly well defined. The smaller retailers, however, sold their wares on the broad streets in stalls, the brick foundations of which can still be recognized.

Over against these commodious mansions Mr Vats at Harappa excavated a block of meaner dwellings all monotonously alike. The standard plan was a mud brick enclosure, 55 by 30 ft., probably open to the air save for a tiny room, 12 by 7 ft., close to the



High Commissioner for India



The methods used by craftsmen of the Ancient Indus Civilizations are reflected in village life in the Valley today: (left) a primitive method of gold refining still in use; (above) the manner of basket weaving has seen little change through the centuries, and (opposite) the village potters of Sind use the same peculiar technique and tools as did their predecessors of the Bronze Age

entrance and a larger one at the inner end measuring 23' by 16 ft. These blocks have been labelled 'the workmen's quarters'. But in one yard a hoard of gold bracelets and jewellery was unearthed.

But of the economic foundation of the urban pyramid, the farmers and fishers whose produce fed the citizens, the architectural record says nothing. Some farmers may have lived within the urban area, as in a classical or medieval city of the Mediterranean. But the large population implied by the ruins could not be maintained on the produce of fields within easy walking distance. Most of the cultivators presumably lived in hamlets of mud huts beside their plots. These have not yet been found; the ancient irrigation canals so conspicuous on the Tigris-Euphrates plain are not superficially visible in Sind.

Few agricultural implements—an ox goad, a pruning knife and some very doubtful stone ploughshares—have been found in the cities;

very likely, as in contemporary Egypt, the peasantry still used a 'neolithic' equipment of stone, wood and bone. We know that they grew wheat and barley (and probably various vegetables and fruits) as well as cotton, and bred several bovine species, goats, pigs and fowls. But the cities were not entirely dependent on the produce of local farms even for staple foods; dried fish was brought two hundred miles from the Arabian Sea to Mohenjo-daro.

The surplus foodstuffs not required for domestic consumption by the farmers supported much the same variety of specialized craftsmen as are found in the Bronze Age civilizations of Mesopotamia and Egypt, Crete and China. From their products and their tools we can recognize coppersmiths, goldsmiths and silversmiths, potters, shell-carvers, gem-cutters, engravers, sculptors. We may infer that weavers, several sorts of woodworkers, bricklayers, leather workers, basket and mat makers were likewise special-



Dorien Leigh

ists. Smiths worked bronze as well as unalloyed copper, but no iron. Potters used the same techniques and tools, including the wheel, as did their contemporaries in Mesopotamia, and turned out the same kinds of fabric. But they manufactured also more decorative vessels painted with handsome patterns in black on a red ground. Some vases were even coated with a genuine glaze, a technique not applied so early in western Asia or Africa. Some copper saws are identical with iron ones now used in peninsular India for carving shell. No woodwork can of course survive, but clay models of couches and carts illustrate what the carpenters could do. Both seem identical with those still used in Sind today.

To allow the crafts to function, organized trade was essential. An alluvial plain usually lacks not only metals but also good timber and building stone. Though the Indus plain is far from treeless, the local wood is of very poor quality for carpentry. In fact we know

the Indus cities used to import deodara wood from the Himalayas. Their copper might be mined in Rajputana or Baluchistan, gold in southern India. Stags' horn was brought from Kashmir, amazonite thence or from the Nilgiri Hills. Semi-precious materials—jadeite, lapis lazuli and rare turquoises—were fetched from even remoter regions: Central Asia, Afghanistan and perhaps Iran.

Such extensive trade in essential commodities as well as luxuries explains well enough the wealth of the merchant class deduced from the prominence of their godowns in the ruined cities. A reflex of it may be recognized in sherds of Indus vases and other distinctive manufactures collected by Sir Aurel Stein from the ruins of illiterate barbarians' villages and townships in Baluchistan and Waziristan. In any case his finds show how elements of higher culture from the valley were radiated over a backward hinterland.



Government of India by permission of Arthur Probsthain



Government of India by permission of Arthur Probsthain

Almost the only surviving example of Indus script are short inscriptions engraved on seals, which were presumably used as amulets. Note the ritual manger with the bull on the left

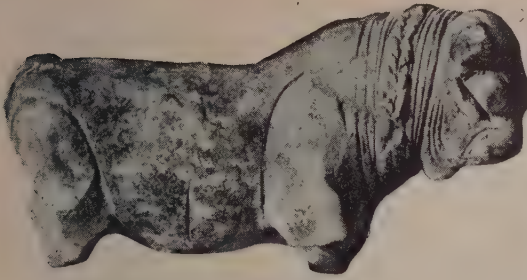
But the most startling feature of prehistoric Indian trade is that manufactured goods, made in India, were exported to Mesopotamia. In one city alone, Ur, no fewer than thirty 'seals', carved and glazed in the peculiar Indus style, have been collected by Sir Leonard Woolley. At Eshunna near Baghdad typically Indian shell inlays, and even pottery, probably of Indus manufacture, have been found as well as seals. These small durable articles must, of course, be regarded as indices of more extensive exportation of perishable materials (still doubtless mainly 'luxuries') such as textiles; textiles are known from literary sources to have been imported into Babylonia from India in the time of Nebuchadnezzar, some 2000 years later. So already in the third millennium B.C. we must imagine caravans crossing the mountains and deserts of Iran and argosies traversing the Arabian Sea from Peninsular ports to the Euphrates cities; sank-shell found in relatively considerable quantities in Sumerian ruins was presumably brought by the maritime route.

A natural corollary is that the Indian merchants must have had agencies in Mesopotamia, and caravanseiras where expeditions could recuperate and re-stock for the return trip. Evidence for this comes, appropriately

enough, from Eshunna, a city located where one route across the Iranian plateau debouches into the Tigris valley. A Sumerian sculptor there has depicted on a vase a scene of Indus cult familiar from many seals from Harappa and Mohenjo-daro. So the Indus merchants and transport men in far Mesopotamia enjoyed on alien soil the comforts of their native worship, just as British merchants in Istanbul or Porto can attend an Anglican service every Sunday.

On the analogy of the Sumerian script it might be guessed that the Indus script had been invented to meet the merchants' need of accurate accountancy. But as they did not write their accounts on imperishable clay tablets like the Sumerians, the proof is wanting. Almost the only surviving examples of their writing are short inscriptions engraved on seals.

The seals themselves, rectangular tablets of glazed steatite, beautifully engraved with animals' figures or religious scenes, might, one would think, have been devised to meet commercial needs, as in Mesopotamia. Unfortunately there is not a scrap of evidence that the seals were ever used to seal anything. Whereas in Mesopotamia, Egypt and Crete sealings (lumps of clay bearing seal impressions) are commoner than seals, none has



Government of India by permission of Arthur Probsthain

Model in pottery, discovered in the Indus Valley, and—

been found in the Indus ruins. Presumably the so-called seals were primarily amulets.

Standards of weight were, however, essential and had been established since weights are found in the Indus cities. Their standards differ from those generally current in Mesopotamia or Egypt. But several weights from Susa on the eastern border of the Tigris-Euphrates delta conform to the Indus standard, affording fresh proof of the ramifications of Indian foreign trade and of its importance.

On the remoter origins of the civilization just described we could only speculate. Some slightly more definite hints as to its subsequent fate are available. In the latest reconstructions of Mohenjo-daro, after the second flood, a progressive decline in architecture is painfully manifest. The topmost walls are built of bricks quarried from the older structures and badly laid. Spacious houses have been divided up to form smaller 'slummy' tenements. It looks as if population was huddled together on the summits of the highest mounds. The relics, though apparently of the same kind as those found lower down, produce the same general impression of impoverishment.

Moreover the old town planning was relaxed; dwellings encroach upon the streets. Smoky industrial furnaces were built in the former residential quarter. The skeletons already mentioned show that the civic government was no longer able to protect the lives of citizens. Impoverishment goes hand in hand with decay of government.

Fragments of a later chapter can be read at other sites. In the upper layers at Chanhudaro and Jhukar in Sind, and in graves dug into the older ruins at Harappa, relics of new type appear. The pottery carries on the old

technical traditions, but the designs and forms are new. Jewellery and even metal is rare. Above all, there are no more inscribed objects, no further written documents. And the large rectangular seals with animal designs are replaced at Chanhudaro by small button seals carved with geometric patterns. These are really like some dug up at Tepe Hissar near Damghan in northern Iran, and the new ceramic art has also north-western affinities.

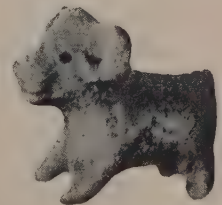
Thereafter the archaeological record breaks off completely for nearly two thousand years. Some time in the interval the hymns of the Rig-veda, the oldest of the Hindu sacred books, describe Aryan-speaking tribes in the Punjab, still culturally in the Bronze Age. The hymns make no mention of writing and do not seem to describe an urban civilization like that discussed above.

The later Vedic and the earliest Buddhist literatures, still handed on exclusively by oral tradition, contain precious data on the growth of Indian religions and give occasional glimpses of social and economic conditions. They provide a reliable history neither of the survival or collapse of the prehistoric civilization nor yet of the growth of a new urban economy and polity. For an account of that we must await the conquests of Darius and Alexander and the subsequent creation of the Maurya Empire under the Buddhist king, Asoka. Then, at length, contemporary native written records begin. At first sight it looks as if a complete hiatus, fifteen centuries of illiterate barbarism, separated the age of Harappa from Buddhist India.

Closer inspection discloses that, if the literary tradition was interrupted, much culture came through the dark centuries from the brilliant prehistoric past. The arts and crafts, furniture and dress, rites and popular cults of modern India illustrate so well the prehistoric remains that no one can doubt they are directly descended from those of the 'forgotten' Bronze Age.

For example, the village potters of Sind today use the same peculiar technique and tools as those of Mohenjo-daro though the

—a small animal in faience. Clay, copper and gold were also used for cultural expression in Early Indus Civilization



forms and decoration of their vases are quite different. Bronze Age fashions of dress and ornament favoured a multiplication of bangles of gold, copper, faience or clay, the wearing of nose studs but not of pins, just as contem-

porary Indian fashions do. Modern couches and carts accurately reproduce Bronze Age models. And so on.

Religious symbolism is even more instructive. The three-faced god, Siva, with attendant beasts, reappears in another avatar

Bronze Age fashions of dress and ornament favoured a multiplication of bangles of gold, copper, faience or clay, and the wearing of nose studs — just as contemporary fashions do



Paul Popper

carved on seal-amulets from Indus cities. The modern sexual cult symbols of linga and yoni afford the best explanation of large stone objects found in the ruins. Popular tree and river cults provide texts to interpret scenes on other seals. Modern Hinduism has surely inherited such deities and cults directly from the Bronze Age. But none of them is mentioned in its oldest sacred book; they begin to emerge in later compilations and commentaries and still more clearly with the 'post-Buddhist' Brahmanic revival. Hence these figures are

pre-Aryan; they have been gradually and even reluctantly adopted by conquerors from the older inhabitants of the land.

So, though the names of the Indus cities' builders be unknown, their works still live. The technical tradition and material equipment devised in the prehistoric past, together with its religious cement, shows through all subsequent accretions. In this sense at least the Bronze Age civilization has never been forgotten. All the recent excavations have done is to reveal the millennial antiquity of the Indian present.

Though village potters of Sind today use the same technique and tools—see illustration on page 175—as their forefathers in the Bronze Age, the form and decorations of their pottery are quite different

High Commissioner for India



The Salmon Harvest of British Columbia

by L. A. ELLIOTT

In August 1941 I went up the Fraser River Canyon, 130 miles east of Vancouver, to see the salmon run at Hell's Gate; a narrow gorge through which the Fraser surges in a tempestuous flood of glacial clay coloured water. That year was the greatest run of salmon since 1913, when Hell's Gate was partially choked by rock, blasted for railway construction, which greatly retarded the passage of the salmon. Following two mild winters, with little snow, the Fraser was many feet below its normal level. This exposed many big and jagged rocks in the river-bed, and quickened the flow in the narrow gorge.

Parking our car on the Cariboo Highway, my companions and I descended the precipitous canyon wall by a steep, winding trail. In half an hour we were standing on the perpendicular walls of rock, fifty feet above the torrent.

In normal years, the water-worn rocks on which we stood were covered with many feet of water. When there is a freshet the river rises as much as a hundred feet at this point.

Hugging the very edges of the canyon walls, at the waterline, were long, submerged, reddish-purple and silver ribbons, which at first sight resembled trailing bands of seaweed. Then we saw that the solid mass was composed of thousands of salmon, taking advantage of every sheltered nook and eddy. On the fringe of this mass, in single file, were individual fish, stronger than the rest, and moving forward more quickly.

Studying that broad ribbon of salmon, which appeared stationary, we realized it was swimming strongly against a current with a speed of twenty to twenty-five miles an hour. Slowly the fish moved forward, and on reaching the vortex of the narrow gorge, hurled

themselves against that churning mass of water. Single salmon would leap ten feet or more above the spray in an attempt to surmount it, be thrown back into boiling whirlpools, and then drift downstream exhausted. They sought sheltered eddies to rest before making another attempt and few would get through.

Some of them, making a final dash through the gate, were thrown high-and-dry on the shelving rocks; others were stunned by the hard rocks and drifted down the yellow flood, dead or dying. This, we realized, was one of Nature's tragedies, in which many thousands of salmon perished.



Stanford, London



The Fraser River Canyon, a few miles below Hell's Gate, seen from the Cariboo Highway, the road first constructed by Her Majesty's Royal Engineers during the gold rush of the early '60's. The two great Canadian Railways operate on opposite sides of the river. The Fraser flows through scores of miles of canyon such as this

Hell's Gate: a narrow gorge through which the Fraser River surges in a tempestuous flood of glacial water. It is here that the salmon, fighting their way upstream from the Pacific coast through miles of rapids, meet their greatest obstacle. That some get through it is proved by the fact that many are found in remote lakes and streams 500 miles inland

Photographs by the author





Entering Dean Channel on board a steamer. The great raw mineral-bearing land is seen in the distance. These waters are honeycombed with salmon nets; at night they are marked by lighted lanterns to guide the sea-borne traffic

Day after day, week after week, that seemingly endless horde of salmon had been fighting its way through miles of rapids until it reached Hell's Gate, the greatest obstacle, at this point about a hundred feet wide, with an average depth of water of 250 feet. The flow of two mighty rivers, the Fraser and the Thompson, are concentrated into a narrow gorge. The rapidity of the flow is comparable to that of a waterfall. The wonder is that any of the salmon get through that narrow gut, after the exhausting trip through miles of rapids. That they did get through is proved by the fact many were found in remote lakes and streams 500 miles inland.

They go up river, hundreds of miles, fighting the rapid flow without food or rest. As the spawning season approaches, the throat of the salmon becomes atrophied and shrinks so that it cannot take food; but a reserve of strength and a stout heart carry it on, until it reaches the sandy-gravel beds of the stream where it was hatched. It would die rather than spawn in an alien stream.

When they reach the spawning ground the salmon are exhausted, emaciated, slimy and discoloured. The female, on her side, ploughs a shallow depression in the sandy gravel, using her tail to scoop out a 'nest'. The eggs are laid, and the male fish covers them with fluid. Thousands of eggs are laid at a time, and more than one nest may be made. As each is completed, the two salmon cover the eggs with fine gravel, and in three weeks or a few months, according to the species and the water-temperature, the young fry are hatched. Some migrate to the sea as soon as they are able to swim well enough. But the Sockeye fry spends about a year in the lakes and streams before going to sea.

"What of the old salmon?" you ask. They die, not so much from the spawning as from exhaustion and atrophied digestive systems. A few days after spawning they drift downstream, dead. That's the only time an adult salmon will go downstream; while there's a spark of life it will swim against the current.

* * *

There are five species of Pacific Coast salmon, each with more than one name: the Chinook, King, Spring or Tyee salmon is the largest, running from twenty to a hundred pounds in weight; its flesh varies from deep red to pink.

The Sockeye, Blueback or Alaska Red salmon runs from five to twelve pounds in weight and has the finest flesh for canning. The British Columbia pack is usually labelled "Fancy Red Sockeye Salmon".

The Coho, Silver or Medium Red salmon runs from six to thirty pounds; on account of its paler flesh it is not canned to any great extent. It is especially good for curing, smoking or salting.

The Chum, or Keta salmon, is in the same class as the Coho for curing, and averages seven to sixteen pounds in weight.

The Pink, or Humpback, only averages about four pounds; when canned it is labelled 'Pink Salmon'. When on the spawning grounds the male fish develops a hump on its back, hence 'humpback'. This species returns from sea at two years of age, and is plentiful along the British Columbia shores.

The Steelhead trout is a splendid game fish, and scales from eight to twenty-five pounds. Its flesh is red and of excellent quality. On account of its resemblance to salmon, the layman usually calls it salmon trout. This



(Above) A sheltered salmon pool in a mountain stream, where children sit and watch the salmon spawning—a common sight in the summer and early autumn. (Below) The Thompson River: a view of the miles of rapids through which the Shuswap and Adams Lake shoals of salmon must fight their way. On opposite sides of the river are seen the Canadian National and the Canadian Pacific railway tracks



species is found in coastal streams from Alaska to California.

* * *

Salmon consort only with their own kind, and in their own creeks. One creek will have nothing but Sockeyes, and it will be a long way inland. The Pink, or Humpback salmon, will spawn within a few miles of the sea. The big King, or Tyee salmon, will travel a thousand miles upstream before spawning.

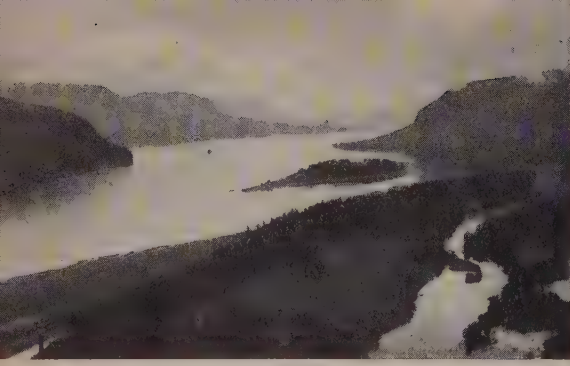
Sockeye salmon enter the Fraser River in shoals, a few days apart. When they reach the confluence at Lytton, some shoals will keep to the left and follow the tawny-coloured waters of the Fraser, spreading over a great network of lakes, as far north as Stuart Lake, 600 miles further inland. Later shoals will turn to the right at Lytton, following the clear waters of the Thompson River, through Kamloops Lake, Adams River, and the extensive Shuswap and Adams Lake chain.

When the young fry become fingerlings, in the lakes and creeks, members of the Salmon Commission catch many of them and clip out a small piece of fin; this heals, but never grows again. A different clipping is used each year, and for each stream. When the salmon returns it is easily identified. Mature fish entering the rivers are also caught and tagged; this gives a positive check on their general movements. The age of a salmon can be ascertained by the rings which form on the scales; as with trees, a new ring grows for each year of the salmon's life.

In September last year I again went to Hell's Gate. Engineers of the Pacific Sockeye Salmon Commission have made an attempt to help the battling salmon pass through the Gate. Pending the construction of proposed fish ladders, a number of rocky obstacles have been blasted away. A suspension footbridge has been thrown across the Gate, and a donkey engine, operating a derrick and brailer (circular net about twelve feet deep, with a steel rim six feet in diameter) has been installed.

This huge brailer is operated by a winch. The equipment stands on a projecting ledge, which forms one side of the narrow gut. The net is dropped into the slack eddies just behind the rock and scoops up the salmon from the water. The fish are dumped into the lower of a pair of huge wooden tanks. A flood of water, released from the upper tank, forces the fish into a flume, along which they travel a distance of 250 yards upstream, into quieter water. The upper tank is kept filled with water by a force pump and an upper wooden flume.

Two great salmon rivers empty into the



(Left) View of the Columbia River about 150 miles from the Pacific. Along this river, at various places, Indians may often be seen fishing with primitive fish traps and spears. They may catch and dry all the salmon they need for their winter's food supply, and take fresh salmon at any time for their own use. (Right) A Fish Ladder at Bonneville Dam on the Columbia River. Scores of visitors watch the fish ascend the ladder, and pass through the counting gates

Pacific from British Columbia: the Skeena, in Northern B.C., meets the salt water near Prince Rupert, in sight of the Alaska Panhandle. The Fraser River forms a delta near Vancouver.

In Pacific waters, the salmon are caught in gillnets, purse seines and fish traps. Practically all salmon are caught near the river's mouth and are then in excellent condition for canning.

The Columbia River, another big salmon river, flows 450 miles in British Columbia before crossing into the United States; it continues another 750 miles to empty its waters into the sea near Astoria, Oregon; about 400 miles south of the Fraser River. Many other rivers, from Alaska to Southern California, yield large catches of various kinds of salmon.

Recently I paid a visit to a number of canneries on the Fjords of Northern British Columbia and on the Skeena River. The first cannery we visited was at Tallheo, in the Dean Channel.

Over 200 Indian girls were employed there; also a few Japanese girls and Chinese boys. Whites, Indian and Japanese men did the fishing. They go out in small gas-boats or dories in which they live and fish for five days at a time. The fish are collected every morning by tug-boats from the canneries.

It was interesting to watch the salmon as they came up a conveyor from the collecting tug. They were segregated into the different varieties, and placed in large bins.

The Sockeye, averaging ten pounds apiece, were fed into a machine called the 'iron chink', which cut off heads, tails and fins, slit the salmon open and removed the 'innards'. Indian girls then inspected the fish and cleaned out whatever remained.

Chinese boys next fed the fish, tail first, into another machine, where circular steel knives divided it into slices to fit the cans.

Tall cans were filled by machine, flat ones by hand. Everyone handling the fish wore white cotton gloves and white rubber overalls. Travelling conveyors carried the fish, and later the cans, from one operation to the next. As they passed a certain point they were weighed and if under weight another piece of fish was added.

In earlier days, we were told, the cans were laboriously made by hand at the cannery. Now they are made in factories at the rate of 300 a minute, and shipped to the canneries flat. At the cannery a machine rounds out the cans and puts on the bottoms very rapidly. The vacuumizing and sealing machine puts on the lids and seals them down. Chinese helpers then packed the cans in stout iron trays; stacked them in steel retorts in which the fish were cooked, at fifteen pounds steam pressure for two and a third hours.

After cooking, the cans were put on an endless conveyor, passed through a bath of lacquer, dried in a current of warm air, and immediately packed in cases for shipment. The labels are put on in Vancouver.

The Columbia River has dams constructed at three points for the purpose of generating power. The fishing interests on the Columbia River, who reaped \$20,000,000 a year revenue from salmon, raised great objections to them. To facilitate the passage of the salmon, the Rock Island and the Bonneville dams are provided with fish ladders, a series of large concrete steps. The water continuously pours down them, and the lusty salmon find travelling easy. Half-way up the ladder, a series of steel racks cross the fishway; these can

be closed for the night. Every fish going upstream passes through a narrow gap, and is counted and classified by men stationed there for the purpose. The day's count is recorded on a notice-board for the public to see.

The fishing interests claim that millions of the fish will never find the ladders, and that the fingerlings, who are just as determined to go downstream as the adult fish are to go upstream, will get into irrigation ditches and perish, or pass through the turbines. The ladders have not yet been in operation long enough to decide these questions.

The Fisheries Commission, long ago, found it necessary to restrict the catches made at the river's mouth, and fishermen are compelled by law to lift their nets on certain days each week, to ensure passage of sufficient salmon to replenish the streams.

Gradually decreasing runs brought about the development of fish hatcheries in British Columbia and neighbouring States. The salmon are trapped on their way upstream, and the eggs taken from them. The hatchery is usually a long, one-storey building with troughs arranged in parallel rows. A gentle stream of water runs through each trough and over the eggs, which rest on fine sand at the bottom.

It is interesting to watch the little creatures as they come to life. First to appear is the eye, then the backbone. In a few weeks each gelatinous egg changes into a tiny fish, which wiggles merrily at the bottom of the tank, and soon learns to swim around and hunt for food.

For the first few days the fry have a yolk-sac attached; this supplies food until they are able to fend for themselves. The little fish are later permitted to leave the incubator and enter outdoor pools, in which they live until ready for release into the river. In this way millions of young salmon are propagated every year.

The Canadian Fishing Company, which operates thirty-three cannery plants along 2200 miles of British Columbia coastline, handles a hundred million pounds of fish a year. They turn out nearly a million cases of canned salmon, and twenty-five million pounds of fresh and frozen fish, smoked and cured fish, fish livers and caviar every year. Salmon oil, which is particularly rich in vitamin D, the sunshine vitamin, is extracted from salmon liver. It is valuable for the treatment of rickets in children. Other grades of oil are extracted for the manufacture of soap and paint. Nothing is wasted; fish offal is turned into fish meal for cattle and poultry, and the residue becomes fertilizer.



(Top) Salmon Cannery in Northern British Columbia. (Middle) Sockeye salmon in the bins at a cannery on the Skeena River. (Bottom) Shipping the last truckload of 6000 cases of salmon from a Skeena River cannery. Chinese workmen load and handle the trucks at almost all the canneries in British Columbia

The Future of Cambridge

by L. DUDLEY STAMP, D.Sc.

In this article Dr Stamp, by taking the specific example of Cambridge, attempts to illustrate some of the problems which must be faced in the National Planning of Town and Country to which the Government are now committed. He gives no answer to the questions he raises: they are intended to provoke constructive thought

UNDER the Act of Parliament passed early in the present year setting up a separate Ministry of Town and Country Planning, the Minister is charged with the duty of "securing consistency and continuity in the framing and execution of a national policy with respect to the use and development of land throughout England and Wales".

This practical step is in fulfilment of promises previously made by the Government in both Houses of Parliament and marks an extremely important change: from local town

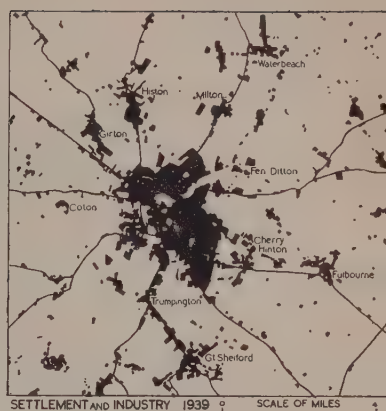
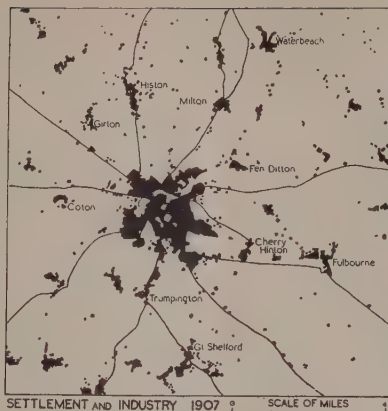
planning to town and country planning coordinated nationally.

There are in England some fine examples of early town planning—in the Roman settlements, in some of the Norman strongholds, as well as in such cities and towns of later eras as Bath and Brighton—but the attempt to regulate the sprawling development consequent upon the industrial and domestic expansion of Victorian times is only quite recent. The first legislative measure empowering local government authorities to undertake plan-

Cambridge, looking eastwards from the tower of the University Library. In the foreground are the new buildings of Clare College; beyond, from left to right, are Clare College and the tower of the University Church, King's College Chapel and King's College

British Council





Three maps showing the rapid growth of Cambridge from 1836 to 1939. All the land shown in black is non-agricultural: industrial buildings, houses and private gardens

ning, in that case limited to suburban expansion, was the Housing and Town Planning Act of 1909. Its scope was widened in 1919, in 1923 and in 1925, but the important Act, still in operation, is the Town and Country Planning Act of 1932.

Under this Act the initiative for undertaking a town planning scheme rested with the local authority. After the passing of the necessary resolution to prepare a scheme, there followed an 'interim period' during which the scheme was prepared, submitted for approval to the Minister of Health (who held local enquiries to hear objections), amended and finally approved. By the end of 1941 there were 'operative schemes' (*i.e.* finally approved) covering only 1,056,000 acres out of the total area of 37,339,000 acres in England and Wales, but schemes deposited with the Minister for final approval covered a further 4,356,300 acres and schemes were in preparation covering another 21,500,000 acres.

Already this local planning had shown itself inadequate in many ways. The central government had no power to initiate schemes, no power to compel local authorities either to undertake schemes, or if they undertook them to secure adequate cooperation with neighbouring authorities. The bulk of the schemes are doomed never to come to fruition because they proceed on the assumption of continued expansion in area and population with the result that even the limited number of schemes in an advanced stage of preparation by 1937—a time of almost stationary population—had zoned enough land to accommodate a population of nearly 300 millions in addition to the present total of 41 millions! The planning

was essentially *town* planning, no protection was afforded to open or agricultural land except in so far as it was desirable for amenity purposes, and even then the ever-present fear of having to pay compensation for any restriction of use prevented adequate provision being made.

Of the need for coordinating local planning schemes into a single consistent national policy there can thus be no doubt, but the practical problems are enormous. To secure a satisfactory marriage between central guidance and local initiative presents all the problems of any human marriage between two very different partners, each equally indispensable to the union. There must be no "dictation by Whitehall", but there must be no "refusal to play" by the local authorities. There are those who firmly believe in continued celibacy and isolation, who regard unplanned *laissez faire* development as the natural course or, in any case, hold that the local inhabitants know what is needed for their own locality and that no outside interference is to be tolerated.

Cambridge affords a particularly interesting example for study because it is possible to trace the 'natural' development and to see the conflict of local opinions engendered both by this uncontrolled development and also by attempts at local planning. At the same time Cambridge is a unique national—one might say international—heritage, whose future is definitely the concern of others besides the local inhabitants.

The three maps above, all on the same scale, show the areas covered by buildings in 1836, at the time of the first Ordnance Survey one-



Herbert Felton



L. D. Stamp

TRADITIONAL CAMBRIDGE

(Left) *The Great Gateway of Trinity College (1518-35).* (Above) *The Gateway of Newnham College (1893).* (Below) *Dining in Hall at King's College.* College life still preserves much of the medieval monastic tradition. Most of the dons are married and have their own homes but they lunch or dine at least periodically at the High Table



Hulton Press

inch maps; in 1907 before the first World War, and in 1939 after the great spate of building between the wars. These maps illustrate the physical effects of the population increases shown by the following figures:

Date	Population of England and Wales	Population of Cambridge	University
1801	8,892,536	10,087	811
1811	10,164,256	11,108	814
1841	15,914,148	24,453	660 ¹
1901	32,527,843	50,453	3,642 ²
1911	36,070,492	55,812	4,470 ³
1921	37,886,699	59,264	5,929 ³
1931	39,952,377	66,789	6,404 ⁴

¹ Students living in college only.

² In addition 330 in the women's colleges.

³ Excluding women.

⁴ In addition 603 women.

THE UNIVERSITY

The above table illustrates the remarkable growth in the number of resident members of the University, especially noteworthy in the

period between the wars. It was 4436 in 1913-14, it naturally leapt in 1920-21 (to 5974) because of the many students demobilized from the forces whose University education had been postponed. Apart from the large number of new professorships created at the same time, Cambridge has many reminders of the great expansion of 1921-39. The new University Library, designed by Sir Giles Gilbert Scott and completed at a cost of £500,000 mainly through the munificence of the Rockefeller Foundation which gave £250,000 to the University, was finished in 1934. The new buildings of Clare College (1924, also designed by Scott), the additions to King's (1928), Jesus (1930), Downing (1931), Caius (1935), Queens' (1936), Peterhouse (1939) and St John's (1939), as well as the many 'schools' on the Downing Site, are but a few examples of University buildings of the 1921-39 period. As the illustrations show, architectural ideas are most varied and opinions differ widely as to the merits of the individual buildings. It is to be noted that the expansion of the University took place

(Left) *The Cam with Queens' College on the left.* (Right) *The garden of Emmanuel.* Most of the Colleges have attractive, secluded gardens, some open to members of the College, others reserved for Fellows or the Master

Herbert Fellon



Ramsay & Muspratt







British Council

(Opposite) *Members of the University.* The undergraduate's gown is a uniform which marks him as a member of the University and under its discipline. War-time shortage of materials has led to the 'square' or mortar-board being dropped for the moment. (Above) *The new University Library.* Architect: Sir Giles Gilbert Scott

without any increase in the number of colleges. Of the twenty Cambridge Colleges all but four date from before the 17th century. The later ones are the two women's colleges, Newnham (1871) and Girton (1872); Downing (1801) and Selwyn (1882).

THE TOWN

Concurrently with the growth of the University has been the growth of the town. In 1801 members of the University represented one per 11,000 of the population of England and Wales, by 1921 this had increased despite the many new provincial Universities to one per 6000. In 1801 the University represented about 8 per cent of the population of Cambridge, compared with about 10 per cent in 1931. Thus while the *relative* importance of town and University—of town and gown—may not have changed so markedly, Cambridge has grown from what was essentially a campus with a pleasant little market town attached to a town of 75,000 inhabitants with

many interests and activities apart from the University.

TOWN AND GOWN

As a Municipal Borough of 75,000 people Cambridge is a town of no mean importance. This is symbolized by the fine new Guildhall, begun in 1937, which dominates the old market square of Market Hill. In that square with its bookstalls thronged by savants and students cheek by jowl with the greengrocers' stalls used by both the students' 'landladies' and the bulk of the Cambridge housewives, the 'town' has become dominant. The shops and cinema on the east, of Victorian-Edwardian date, and the modern block with shops (which is actually the new building of Caius) on the north seem foreign to the University whose own church flanks the square on the west. But just as the University resented the intrusion of its peace and seclusion by the coming of the railway in the 'forties, and insisted on the station being a mile and a half



L. D. Stamp

The new Clare College buildings, also designed by Sir Giles Gilbert Scott

to the south-east, so the non-University growth of Cambridge has been markedly localized. Broadly speaking the colleges lie along the east bank of the river Cam: only one (Magdalene) of the older colleges and part of St John's were built to the west of it. Newnham, Selwyn, Westminster, and further afield Girton, the University Farm and National Institute of Agricultural Botany sought the west, and the University of recent years has persistently faced westwards and turned its back on the east. The new Library and the new buildings of Clare and Queens' are all to the west of the river and in the vicinity of the Library has grown up a select residential quarter essentially 'university'. Through the Cambridge Preservation Society a large belt of land was purchased to be kept as open farm land on this side of Cambridge, to protect the amenities. There has been similar interest southwards—up river to Grantchester and in certain crucial areas such as the Gogs and Maddingley Hill—but what has happened to the east and north of Cambridge is another matter. There are roads of solid, slightly pretentious but now shabby-genteel Victorian

houses and, near by, mean streets of almost slums. Much more extensive are the large housing estates developed, as map 3 shows, almost entirely in the 1921-39 period. Architecturally much of the building is atrocious—a whole street for example of double-storied semi-detached council houses built of asbestos or steel sheets, on a steel or wooden framework—and from the point of view of planning the approach to Cambridge (for example from Sawston through Trumpington) has been ruined by some of the worst examples of ribbon development to be found anywhere in England. Apart from the dirty cement industry various light industries have developed: there was little or no unemployment.

So much has already happened: what of the future?

THE FUTURE

Probably the views held about the future of Cambridge are as diverse as are to be found in any town in the country. Broadly speaking the older University dons dislike change: they desire facilities for their work and that



L. D. Stamp

L. D. Stamp

UNIVERSITY BUILDING 1921-1939

(Upper, left) The new Queens' College buildings, completed in 1936, are the most disputed in Cambridge. (Upper, right) Fencourt Peterhouse, completed in 1939; the new wing with its modern lines hides behind the old Peterhouse wall and overlooks the 'Fens'. Notice incongruous Victorian houses on the left. (Lower, left) The new King's College buildings, completed in 1928, built to match earlier buildings. (Lower, right) The new Caius College buildings, completed in 1935. A new departure from tradition is shown in the shops at street level. The University Church, Great St Mary's, is on the left. (Below) Pair of modern houses in the University residential quarter. Both distinctive in their own way, they unfortunately stand side by side

essential atmosphere of calm and seclusion in which the cultural life of the nation is best fostered. There is a marked tendency to dislike 'planning', especially town planning applied to Cambridge, but an equally marked tendency to an ostrich-like attitude which

refuses to recognize the inevitability of change. Though the people of Cambridge unconnected with the University may live in suburbs or areas apart, they shop in the centre. Already the most prominent sites in the heart of Cambridge are occupied by large branches

L. D. Stamp

L. D. Stamp





of nation-wide multiple companies which, with several large cinemas, cafés and local stores, draw to them the shopping crowds from the whole. The heart of Cambridge, quite apart from its narrow streets, has become too small for the sprawling physical body it has now to serve—for Market Hill has not increased in size nor have Petty Cury and Trinity Street become any wider.

Much land in and around Cambridge is owned by the Colleges and there is not infrequently a conflict of views within the University itself. It is the obvious duty of the Bursars, for example, to watch the College profit-and-loss account and its balance sheet. However desirable it may be from the amenity angle to discourage further building there is an obvious temptation, seeing that more building is bound to take place anyhow, for the Colleges to sell or develop some of their land 'ripe for development'. Consequently when the planning scheme for Cambridge was under consideration, most of the Colleges insisted on securing their *right* to future profits of this sort by insisting that most of their playing fields and open land should be zoned for housing. The purchase of land by the Preservation Society for retention as open land has in fact shifted not a little of the 'floating value' onto the property of the Colleges and rendered the temptation greater. Thus in a way the University is its own worst enemy.

Where a town depends on a single industry there is clearly a danger should depression or evil times hit that industry. There is the further fear if a single industry dominate a town that 'big business', as represented by the controllers of that industry, may exercise also an undesirable degree of control over the affairs of local government. Whether University education should be regarded as an 'industry' in this sense is a moot point, but there is undoubtedly a strong body of opinion which resents any semblance of dominance in

NON-UNIVERSITY BUILDING 1921-1939

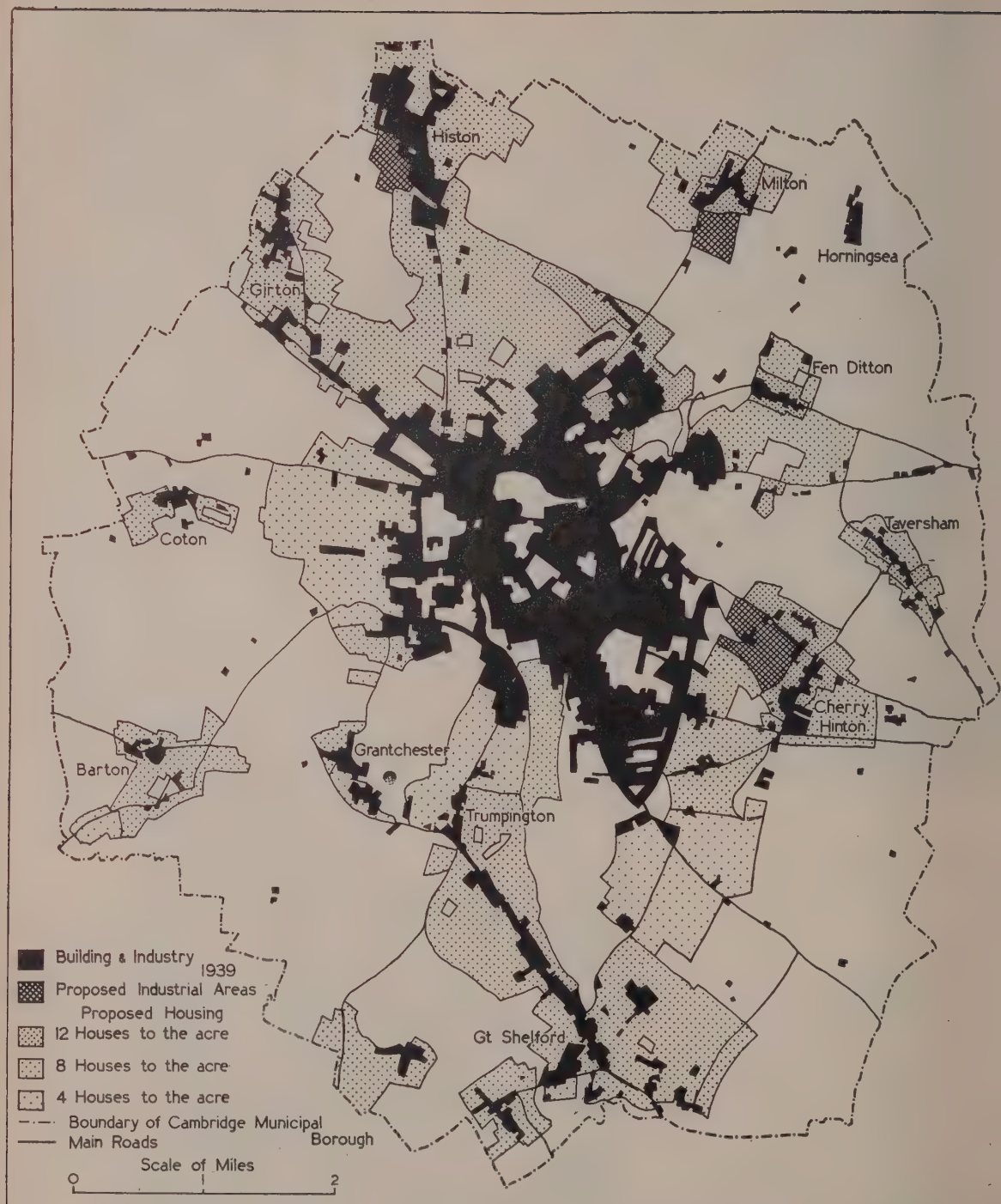
(Top) *The brewers' contribution to new buildings.* (Second) *A possible entry for the ugliest Council houses? Asbestos or steel sheets on a steel or wooden frame, the whole coloured a dull pink. The occupants claim they are cosy and dry.* (Third) *Interesting examples of prefabrication: each side of the house is of reinforced concrete, made on the ground and then hoisted up and joined at the corners.* (Bottom) *The new Guildhall, begun in 1937*



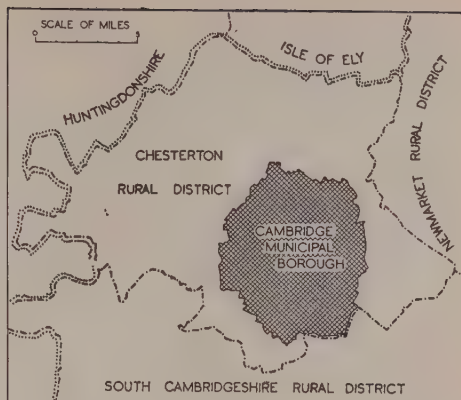
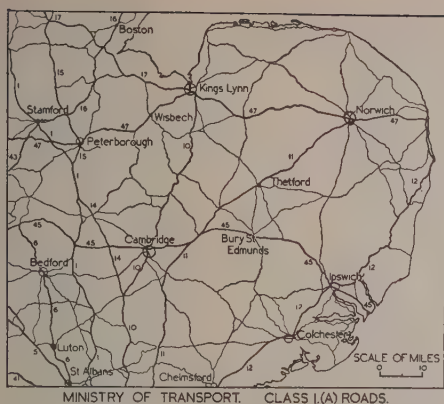
L. D. Stamp

(Above) *Via Devana* as it should be and (right) as it is in 1943. This old Roman Road is the main artery of Cambridge. Even with the comparative sparseness of traffic in war-time this lower picture speaks for itself. Yet many claim that Cambridge does not need a ring road





The Cambridge of the Future? This map shows the huge area which will be covered by the town if the planning proposals agreed on just before the war come to fruition. Provision is made for about 175,000 people instead of the present 75,000



(Left) *Cambridge as a road centre. It lies on the one main route from the industrial midlands to the coast resorts of much of East Anglia as well as on the direct route from London to King's Lynn and Hunstanton. Yet University interests still oppose a ring road to by-pass Cambridge.* (Right) *Cambridge is a Municipal Borough, almost entirely surrounded by Chesterton Rural District. It is the only important town in the County, yet some consider it ought to be an independent County Borough*

local government by the University and which would welcome a diversification of occupation—for example the further development of manufactures. It is noteworthy that the planning scheme for the town, which was completed and but for the war would probably have been finally approved, zoned roughly 165 acres for industry and approximately 3400 acres for additional housing, at densities of four to twelve houses per acre, making provision for a further 100,000 people.

The suitability of Cambridge as a manufacturing town is heightened by its focal position relative to both rail and road (only one and a half hours from London) and its natural suitability to become the 'regional capital' of the rich agricultural province of East Anglia. During the war it has fulfilled the latter function and, although there is considerable opposition to regionalism if it means dominance over local authorities by regional officers appointed rather than elected, the great advantages of having in the heart of an area representatives of the central government departments who at the same time know local problems is such that there is a definite function for a regional capital, a dignity likely to be retained by Cambridge.

The story of how a cycle repair shop became a great motor industry and overwhelmed the

city of Oxford is too well known to need emphasis. The interest of the University of Cambridge in precision scientific instruments was natural. That it led to contact with wireless development is also natural and with such a young and vigorous industry what is more likely than a future expansion as yet undreamed of: Cambridge as the centre of the wireless manufacturing world, its thousands of factory workers thronging the narrow lanes where once the undergrad's gown reigned supreme?

What may be the pattern of the Cambridge of the future it is impossible to say: it may remain a predominantly university town of limited size, it may develop into a manufacturing town. One thing is certain, change is inevitable and the question is should changes be allowed to take place haphazard, should they take place in accordance with a local plan, or should the nation step in and say what it considers is the function of Cambridge in the national life? To decide this crucial problem is the function of National Planning.

Cambridge has sons in every walk of life, in every corner of this country and indeed of the world, and they know that Cambridge is a unique heritage. Let us first suppose that they make their voice felt and that Parliament makes clear to the Government that it is the nation's wish that Cambridge should (a) re-

main predominantly a centre for education and research and (b) that its growth both in area and population should be limited. How should such a decision be carried out?

The first requirement is full control by the State over the use of land. There are several ways of securing this: one is land nationalization, a second is the vesting in the State of all development rights as proposed by the Uthwatt Report, a third is the purchase by a special corporation of all land involved in the planning area, a fourth is the payment of compensation on an agreed valuation for any restriction in the use of land, *i.e.* when agricultural land is ordered to be kept as such the owner would be compensated for losing his right to develop. Control is the first thing.

But the plan is the second. In such a case it would have to visualize the functions of Cambridge as a national educational centre and the land use which would be involved, a plan with details would have to be agreed with the town, the University, the surrounding local authorities, the county (see map on page 197) and the central planning

authority. It would be different from any planning scheme yet devised because it would strictly limit various forms of growth—it would “zone very tightly”. With such an areal plan there would still be the enormously important work of building and rebuilding: local initiative, complete cooperation of all concerned would be essential but it would be clear to all what were the objectives to be reached.

How much interference would this involve with old privileges and rights? Not necessarily any, provided there was loyal acceptance of the righteousness of the national plan and the national objective, but change or adjustment there might have to be, even within the inner councils of the University. Take a specific case. This country has at the moment only one national library, the British Museum, where everything published must be deposited. The Cambridge University Library is one of the Statutory Libraries and is entitled to receive copies of all books published, but it is left to a small committee to decide what shall be placed in the library catalogue, so that the library is in fact very incomplete.



F. R. Winstone

To relieve the intolerable congestion in London it might well be decided to encourage research workers, whether connected with the University or not, to use Cambridge as their centre, and a review of Cambridge University Library policy both in relation to its acquisition of books and its facilities for public access might become a matter for urgent national consideration.

Physically there are certain outstanding considerations. Cambridge streets are narrow; they are flanked by buildings which are priceless. Cambridge must in any case be a traffic centre: to ease the situation every vehicle which does not need to seek the centre of Cambridge must be diverted. A complete ring road is essential; it must be a true park way with absolutely no ribbon development and so designed as to



L. D. Stamp

Cambridge has miles of such streets as this. The houses may be owned by the Colleges but the whole district remains an unknown land

maintain, not destroy, agricultural land and rural beauty. Only so can we retain the best of the old in a world which must be ever new.

(Opposite)

The threat of Heavy Industry. Great cement works already exist — fortunately on the leeward side — only two miles from the heart of Cambridge. (Right) The threat of Light Industry: an old Cambridge parish churchyard now hemmed in by factory buildings



L. D. Stamp



In the Mountains of Algeria

by GEORGE H. T. KIMBLE



Stanford, London

ALTHOUGH I had taken the precaution of reading as much as I could about Algeria before I went there, I was surprised to find frozen landscapes in April and the high passes through the Atlas Mountains still blocked by deep snowdrifts. This at a time when strawberries were being gathered in the Algerian valleys leading down to the Mediterranean. A second surprise was the complexion of the inhabitants; many of the Berbers, who with the Arabs constitute the majority in a population of some seven millions, might be mistaken for Anglo-Saxons. Experts say there is a racial link between the two. My third surprise was the contrast between life on the coast and in the interior. The at times

(Above) In contrast to most Moslem communities, the women of Menâa, in the Aurès Mountains, go unveiled. They do most of the heavy work. (Opposite) A 'street' in Menâa; the ruined tower was formerly used as a look-out from which the watchman could warn the village of an impending tribal attack





The Romans in Algeria built many fine cities round the foothills of the Atlas Mountains. Timgad, with its spacious colonnades, elegant baths, public buildings and works of art, still bears witness to the prosperity of the 'corn, wine and oil' economy of those days

sophisticated atmosphere along the seaboard reminded me of the South of France. The fact is, of course, that the French have striven to turn the Algerian coast into a southern annexe to their Riviera, and to organize its urban and rural economy on similar lines. Up to a point they have succeeded. Algiers lacks none of the amenities which have made Nice and Cannes, for instance, attractive to the tourist; while the fertile lowlands fringing the Mediterranean are devoted to the cultivation of such characteristically Provençal crops as the vine, olive, cereals and early fruits and vegetables.

But if the coastal plains are occidental in character, the mountainous interior is unmistakably oriental. Apart from one or two 'routes nationales', there are few roads in the mountains, which means that the best way to get about is still on mule- or camel-back. In parts of the Aurès Mountains north-east of Biskra signposts still give the distance between places in hours—for mules! Just how difficult

the going is in this region may be judged from the fact that even the road-building Romans left it pretty much as they found it. The foothills and plains around the Aurès, on the other hand, abound in evidences of Roman occupation.

Nor have the various Arab invasions of the country left much mark. The Berbers have been 'Arabicized' to the extent of becoming, nominally, Mohammedans, and adopting Arabic as the common tongue in mosque and market-place; but they were never 'conquered' by the Arabs, who made no attempt to colonize their mountains. After thirteen centuries there is still a clear division between the upper limit of Arab settlement and the lower limit of Berber settlement, and among themselves the Berbers still speak a language which is unintelligible to their lowland neighbours.

Almost all Berber customs bear witness to their traditional aloofness from the peoples around them. Their farm customs, for instance, are today as crude as those of their



The primitive wooden plough, which the ancient Egyptians would probably have considered old-fashioned, does no more than scratch the soil. As it is customary to sow the crop before ploughing, a good proportion of the seed is not even covered over

ancestors of two thousand years ago; a wooden plough that the ancient Egyptians would probably have considered old-fashioned is still used, and, until recently, one of the Aurès Mountain tribes employed a block-and-tackle device almost identical with that described by Cato in his treatise on agriculture.

Apparently the Berbers are conscious of shortcomings in their farming methods and tools which they try to offset by the practice of semi-pagan rites. One spring afternoon I arrived at a mountain hamlet to find all the men and boys adjourning to an olive grove nearby for the purpose of 'blessing the plough'. Though a few ploughs were there—one man had carried his more than two miles to make sure of his blessing—the feature of the gathering was the prodigious amount of food. Upon inquiry I learned that the whole village had clubbed together to buy out of their penury the carcasses of two bullocks, which were at that moment being divided into equal portions—meat, fat and entrails—among the

company. In addition there were large wooden basins full of *couscous*, a mush of semolina smothered with a kind of vegetable soup, which was devoured on the spot (it had been a hard winter and this was the first good meal many of these Berbers had had for months). The meat, however, was taken home, dangling on the end of a piece of string, to provide a 'blow-out' for the family. I asked the man with the plough, which had been sprinkled with blood by the sheik, if he could explain the purpose of what had been done: all he would say was that there would now be enough sunshine to bring his figs to maturity: his trees were well up the mountain-side and, near the normal cloud base, sunshine was by no means certain to ripen them.

For many Berbers figs are the main food. With another tree-crop, the olive, they are better adapted to high altitudes and rugged country than are cereals or even vegetables, and less likely to induce soil erosion, the curse of high Barbary as of many another mountain country.



It is a poor souk (market) that does not attract a crowd of more than two or three thousand men. The Lafayette market (above) often has an attendance of 10,000. (Below) Home of a Berber community in the mountains of Kabylia



Where conditions allow of their cultivation, cereals (mostly oats and barley) and vegetables (beans, peas, lentils, etc.) are raised, but yields are generally poor, unless the land is terraced and irrigated. When this is done, as in the Aurès Mountains, land values soar and competition for water rights becomes keen. For the privilege of drawing water—when the land needs it badly—from a single channel the size of a street gutter, many Berbers will gladly pay 250 francs a day: if they don't, they may quite easily lose the whole crop. And crops husbanded in this way pay good dividends, though few cultivators find themselves with a marketable surplus at the end of the harvest. In fact, they are more accustomed to shortage than surplus, which explains the precautions taken when crops are ripening. To a man they build themselves booths, sometimes on stilts, in which they pass the night keeping guard with muskets of antique design. Nor is their vigil at an end when the last trees and plots are stripped, because the fruit, such as figs and apricots, has then to be laid out to dry on the flat roof of the owner's house, and in the Aurès the houses are so arranged that one man's roof is, more often than not, another man's roadway.

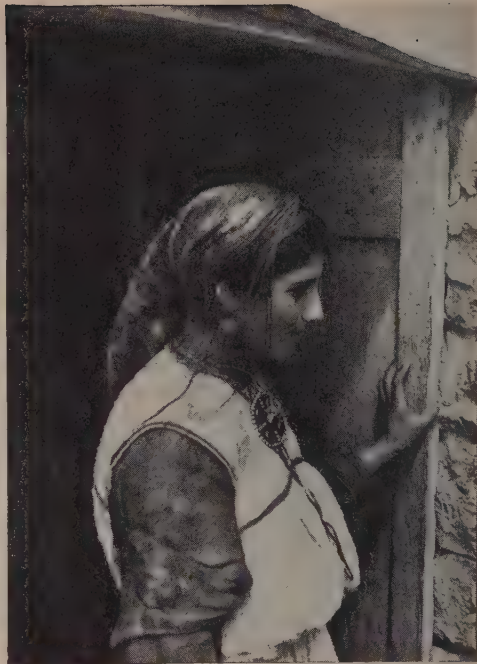
In the southern Aurès the crops are all garnered by about July and there is nothing more to be done on the land until the winter rains. In the meantime, as pasture is unobtainable locally, these Berbers (or Chaouias, as they are called in the Aurès) are compelled to drive their animals to the better-watered ranges five or six days' journey further north. These migrations present a remarkable spectacle: the spectacle of a whole community, even a whole tribe—with arms, baggage, domestic animals, flocks and children—on the march, one might almost say, in flight. Roads being what they are, tempers as well as footwear tend to get frayed. However, the coming of civilization has done at least one good thing for these people; it has brought old motor tyres which they can buy for next to nothing: these they cut up into suitable lengths and make into shoes much more durable than the usual alfa grass sandals. They call them 'tomobiles', and have already come to distinguish between good rubber and bad. When asked if his shoes were proving satisfactory, one muleteer replied in an almost offended tone: "Can't you see I'm wearing Michelin tyres?"

While the Chaouias are away most of their families shut down their houses, but before doing so remove their valuables to a communal storehouse known as the *guelaā*. Built



(Above) At the souk you can have the most painful tooth extraction in the world for ninepence, and very popular it is—with the on-lookers. (Below) When Berbers leave their villages for the mountain pastures they remove their valuables to a communal storehouse known as the *guelaā*. The *guelaā* at Baniane is four storeys high, contains fifty-five separate chambers and is perched on the edge of a cliff overlooking the Wadi el Abiod





(Left) Where sanitation is unknown and there is no cupboard accommodation, food storage presents a problem which the Berbers of Kabylia have solved by using large store-jars made from a mixture of clay and dung. Note 'Fatima's Hand' on the wall—the Moslem equivalent of the lucky horse-shoe. (Right) A Berber beauty

of mud, stone and date-palm timbers, these storehouses are three or four storeys high, perched on the top of a steep hill or the edge of a cliff. Some of them are accessible only by a rope-ladder. For the guelaā is not merely a granary, but a fortress as well. In a land of half-empty stomachs, there are many people who would be unable to resist the temptation of plundering the guelaā of an almost deserted village. I visited one which had fifty-five chambers in it, roughly one for each family: in them were stored the year's crop of fruit, grain, beans—in fact all the foodstuffs capable of being preserved.

In the mountains nearer the coast, such as the Djurdjuras of Kabylia, there are no large-scale seasonal migrations, but the men lead a semi-nomadic life, dividing their time between farmstead and weekly market which may be as much as two days' journey away.

The *souk*, or market, is much more important in Algeria than with us, since all the shopping the people do must be done there: village stores, even where they exist, can seldom rise above sugar, coffee, soap and monkey-nuts. In a country poorly equipped

with roads and telephones, where few men can read or write, the market becomes, too, the local clearing-house of information and gossip. And not least important, for the French authorities market day is the one day in the week when they mix with the people. It is a poor market that does not bring upwards of two or three thousand Berbers down from their mountains, and some markets attract as many as ten thousand.

The trade of these markets is comprehensive. There are bullocks and sheep, sold mainly for food and slaughtered as required; mules and donkeys for transport; cows and goats for milking, and seedy-looking poultry. In season, there will be bundles of unwashed wool for sale—no Berber woman is worth marrying unless she can weave a carpet or a burnous (the hooded mantle which is worn, summer and winter alike, by all true sons of Mohammed). Also in season, the market is strewn with neatly-piled heaps of oranges, lemons, apricots and melons. Dried figs and dates manage to appear all the year round, though they often look the worse for wear. Other things in regular supply in peace-time

(Right) Cattle have a thin time in the mountains of Algeria. Fortunately the olive grows well in most areas and olive oil, in the Berber diet, takes the place of dairy produce in ours. Here the fresh-picked olives are being ripened off in the sun preparatory to being processed in the local village press



(Below) Since the coming of the French, the demand for native jewellery has steadily grown. To meet it, many of the more enterprising silversmiths have migrated from the mountains to the French towns in the valleys where, in addition to plying their ancient craft, they act as agents for equally enterprising sewing-machine firms



include olive oil, generally sold from goat-skin bottles and sampled by dipping a finger and licking it; salt, used mainly to keep meat from going bad; cotton goods, perfumes, boots and shoes, oil lamps, pots, pans and a wide variety of cheap trinkets. And there is always a corn section where business is done on the "good measure, pressed down and running over" principle. The buyers see they get it too, for they think nothing of spending half an hour trying to pile a few more grains onto the cone which tops the legal measure. Nor is the market complete without its dentist-cum-druggist. You can have the most painful tooth extraction in the world for ninepence, and a very popular operation it is—with the onlookers.

Many of these markets only came into existence after the French occupation as a direct result of French enterprise. And incidentally the authorities made 'a good thing' out of market tax-collecting. Latterly all the sites in the market-place were let to the highest bidders: those natives who had no regular stall, but relied on touting, paid a tax on everything they brought within the precincts of the square. Formerly, anybody was free to buy and sell. One result of the later regime was that the selling side of the business was in the hands of fewer men, mostly the Arabs, and, unfortunately for the Berber, who is at the best of times in the grip of the moneylender, this meant higher prices. There was supposed to be a fixed price for everything—but only if the gendarmes were about! It was advisable to buy corn only when the authorities were present: Barbary is full of measures with false bottoms.

But the French have done many things for the Algerian besides levying taxes. They offered him French citizenship, the protection of French law, and invited him to be educated on the French pattern. In all the schools the teaching has been in French with a curriculum substantially the same as in the metropolitan areas of France. This, of course, was not without certain incongruities: in one school I visited, boys of 11-12 were being taught to produce and print their own magazine, though some of them could not read what was printed, and to take systematic weather observations. The girls, when they attended, which was not often after they reached the marriageable age of twelve or so, were taught knitting, laundering, French cooking and table etiquette—arts bearing no relation to the primitive appointments of their homes which are as bare of furniture as they are innocent of sanitation.

At the same time many schools possessed

good experimental gardens where the masters could demonstrate the value of new crops (such as green vegetables and temperate orchard fruits), chemical fertilizers, scientific rotations and terracing, for want of which much of the land is declining in productivity. Unfortunately, the Berbers are slow to profit by such examples. Their fields are full of stones but they would not dream of disturbing them; "Allah put them there; let no man remove them." Again, when they are given seed potatoes by the authorities they merely add them to their evening bowl of couscous.

The Berbers' main interest in 'culture' has been to learn enough French to get them through their three-years' conscription in comfort and perhaps enable them to take a temporary job in one of the big cities, such as Constantine, Algiers or even Paris. A surprising number emigrate temporarily. Most of them will be engaged in menial work which offers good pay by local standards. The younger men often stay until they have accumulated enough money to buy a bride—a good-looking woman costs anything up to 2500 francs—and settle down on a piece of land in their old village.

You might imagine that residence abroad would induce a desire for a higher standard of living. While it is true that some acquire a taste for iron bedsteads, tables, oil lamps and the like, most of them remain content to spend their nights rolled up in a homespun rug on the hard dung floor, and to eat their food out of a common wooden bowl by the light of a smouldering, chimney-less fire.

The Berber still lives in much the same way as his forefathers. He still settles disputes by blood feuds, with the aid of professional assassins. He still practises a most sinister form of medicine: the recognized cure for bleeding is to apply a poultice of gunpowder, cow-dung and henna. Moreover he is still pagan at heart, and almost everything he does, from ploughing to plundering, requires an accompaniment of charms and incantations. In such a world it is not to be wondered at that French and Berber find themselves perpetually at cross-purposes.

(Opposite) Looking into the 'well' of a *guelaa*. Communication from one floor to the next is by means of protruding date palm timbers. Each chamber has its own cumbersome wooden locking device and is large enough to hold a family's store of dried fruit, grain, beans and private belongings



The Convoy

by CECIL BEATON



Mr Beaton has recently returned from an official tour of the Middle East battlefields. He gives here his impressions of what it feels like to travel in convoy

TIME and place of departure were "Most Secret", the baggage had to be specially labelled—that was all we knew.

Railway stations at night present some of the most warlike scenes we see in war-time England. Here the fervid, hasty farewells of

soldiers, sailors and airmen take place in the darkness that is only broken by the puffs of red smoke from the engine funnels.

Necessarily the organization that has planned such a tremendous convoy as this must be on a giant scale. Yet delay after we



Cecil Beaton



Cecil Beaton



(Top, left) Duffle-coated officer on the bridge at the start of the voyage. (Top, right) View of some of the convoyed ships and their escort. (Below) Sailor in sunshine

Cecil Beaton



Ministry of Information
Cecil Beaton

have lost contact with the shore is brief. We enjoy spending the days hanging over the side of the ship awaiting from Admiralty the order to sail. We watch the gulls weaving about in an atmosphere of pearly haze; a Whistlerian sunscape. We welcome the arrival of an American destroyer—good augury for our trip.

Before the war our ship had been a luxury pleasure cruiser. Even now, behind her coating of armour plating and camouflage paint, she shows signs of her former existence. Some of the doors are marked *Señoras*, but we are an all-male populace aboard, a world comprised of men from all walks of life: service men, Government officials and technical experts. One, now an armaments manufacturer, had been a fighter pilot in the last war.

(Left) "At daybreak we find ourselves in the centre of a vast flotilla of many sorts of ships . . . Our neighbours, travelling in the same direction at the same rate, rob us of any sense of speed". (Below, left) Sailors splicing rope; (right) Canadian pilots on the mess deck. (Opposite, top) The 'teeth' of the Convoy; (bottom) lunch time for the officers on board one of the cruisers



Cecil Beaton

We all ask one another questions. When do we sail? Where do we arrive? No one knows the answers for certain. There are no carpets now and in place of books in some of the cases in the former library are rows of revolvers. The corridors are lined with guns. The erstwhile First Class dining-room with its elaborate rococo balconies is now converted into a mess deck for the rating passengers whose hammocks, baggage and photograph souvenirs transform the scene.

The Commander flashes his torch onto me in the dead of the night. "Would you like to come up onto the bridge with me—I have something to show you?"

We climb the ladder staircases. Deep and muffled voices are heard, small lights flash signals in the dark. The Captain, in his sheepskin coat, gives his order into the mouthpiece, his instructions echoing below into the bowels of the ship. The hum of the engines is heard, the anchor is raised. Stealthily four thousand tons of metal are precipitated smoothly through the night and we start our hazardous journey in the dawn.

At daybreak we find ourselves in the centre of a vast flotilla of many-sorts of ships, magnificently escorted, most of them prized at more than one or two million pounds and each carrying valuable cargo. Our neighbours, travelling in the same direction at the same rate, rob us of any feeling of speed. All the ships in the convoy look like toys drawn across a pond on a string.

Nothing sensational happens on the trip—nothing that makes news in the newspapers. Yet by the very fact of its major uneventfulness this journey marks a further triumph for the Navy. Here is just another instance of a convoy getting through safely.

Each man carries his lifebelt and is given a tin of iron rations—concentrated food in



Ceril Beaton





Above decks flags are hoisted to communicate with the other ships of the Convoy; below, passenger troops write home, play 'nap' or poker. Nothing sensational happens. The journey marks a further triumph for the Navy: just another instance of a convoy getting through safely

Ministry of Information

Cecil Beaton



pastille form—the rafts are secured and rubber floats made fast. Tins containing fresh water are attached to them in readiness. The R.A.F. passengers take their watches on the bridge looking out for hostile aircraft. Preparations for all eventualities are made. Bugle-calls have sounded us to action stations, signals have instructed us to rehearse “abandon ship”.

Soon all sense of time is lost; the days of the week submerge into one long day as imperceptibly the water becomes more blue, the sun gains in strength. The sailors have their favourite tune in their heads; down the corridor is one man who sings nothing but *The shamrock you're wearing*, another croons *Elmer's Tune*. In the afternoon they sew, ‘make and mend’; one plays an accordion, and another on his mouth-organ dirges *Way down upon the Swanee river*. Lying in their bunks with walls pasted with photographs of Hedy Lamarr, Lana Turner and Veronica Lake and ladies with low-cut bodices to their well-rounded bosoms, they talk as sailors must have talked since the days of Drake. The tradition of the sea is unchanging, perhaps because the sea itself is unchanging.

The passenger troops write home about the ‘movies’ shown aboard. They write about the food and the dolphins and sharks they have seen. They exaggerate the roughness of the sea, and any incident they may imagine. At least one of them breaks the news to the girl he left behind that he is not free to marry her after all. They play ‘nap’ and poker. At



R.A.F. Pilots leave the Convoy in a launch: some to fly another stage to their destination, others to find local colour ashore

Cecil Beaton

the end of a game the bright one says: "You ought to be given the V.C. for your courage in that hand." The other replies: "I wouldn't have dared if we had been playing for money." The Chief Engineer, in a siren-suit with a torch in his hand, inspects the engine and boiler-rooms, which, with their pipes and tubes covered in white asbestos, look like the

intestines of antarctic prehistoric animals. The storekeeper unfastens the padlocks of the medieval dungeon-like safe where, in an ice atmosphere, food is stored; enough for five hundred people to live upon for a year.

Cypherers and decoders work twenty-four hours of the day as signals come in by the

hundreds. These messages are pleasant and friendly links with Whitehall that create confidence in most instances. Flags are hoisted to communicate with the other ships of the convoy. The plotters in the small Holy of Holies, the plot-room, mark with flags our progress and the positions of submarines reported to be in the vicinity. The Commander in his cabin is exchanging sea stories with a number of his contemporaries. He has not come across them since their days together at Osborne. They are now passengers, many of them Commanders on the way to join their ships in the far corners of the world. The Captain never appears even for meals—he remains on the bridge.

A submarine is reported seen on the surface at position so-and-so; two destroyers dash to the attack; depth charges are dropped; our ship shudders with the impact. On their return the destroyers report a conning tower seen for a few seconds. The interpretation may be that the submarine was forced to the surface by the explosions, but might contrive to continue unhampered on its way. Bodies or debris must be sighted before a 'probable' is claimed.

On Saturday nights the officers drink a glass of port to 'wives and sweethearts', and one wag never fails to make the conventional retort "And may they never meet". On Sunday the ship's company sings the hymn *For those in peril on the sea*. One morning is given to gun practice, and the roars and echoing booms create an artificial thunderstorm: the tracer bullets look like fireworks. The flashes of neighbouring guns are seen long before the answering explosions are heard and we realize the vastness of the sea. We are given a sense of distance.

By degrees all woollen garments are shed. On a specific day everyone appears in tropical kit. The ship's company look like guests at a party on the stage: "In Act 2 the scene changes." The Chief Engineer is particularly comic in his white shorts and little boy's socks. On the 'Orders of the Day' board the Commander warns us against the power of the sun's rays: "Anyone who sunbathes to excess may expect, and will receive, little sympathy from the Ship's Doctor." At night the decks are strewn with white draped figures like rows of Greek statues. It is too hot to sleep below. The sea by day is the colour of grape hyacinths. The flying fish look like dragonflies.

An aeroplane flashes a message, "An armed cruiser has been seen travelling in our direction", and is off in chase. Our course is altered, tin hats are produced; every man

aboard becomes a fighting unit, and hastens to make his contribution to the prospective fight. Everyone waits. . . . The excitement dies down as the rumours pass through the ship and, like voodoo drums, the news has gone round of the false alarm. The Commander receives a signal: "Think old So-and-so must be 5th-columnist, giving us that scare." At this stage the language of the sailors has influenced the speech of the Government officials and the technical experts. Few of the civilians are recognizable as the men that left that secret port in their tweed coats. Many are suffering in various stages of sunburn. One, like a pirate in an amateur pantomime, has been painted by the M.O. with a false purple beard against 'scurvy'. Some of our escorting destroyers return home to re-fuel. Others arrive to replace them.

One morning we learn that we shall arrive the day after tomorrow at 09.00 hours: so the largest convoy that has yet gone out has succeeded in eluding the multiple dangers of the deep. The Captain appears for dinner wreathed in smiles. He has the first drink of this voyage to celebrate another important score marked up against the enemy.



Cecil Beaton

Journey's End—in the 'Under Twenty Club', Alexandria

The Shepherds of Greece

by ANDREAS ADOSSIDES

In Greece, after the short, sharp winter, the skies clear suddenly and the sea smiles like an archaic maiden. Spring bursts forth unheralded, the sun pours down, and blue and yellow rays dance on the crest of millions of sea-ripples, on the wet beach of coloured pebbles, on the broad waxy leaves of the fig tree and on the tips of the pine needles. Every stone, every rock-pool, as well as the damp, uncovered carcasses of the mountains, shine and sparkle. The air is warm and the birds, diving through the clear space, shiver with joy and fill the sky with song.

It is then, in the middle of March, that the shepherds start on their journey from the plains to their summer quarters. The conical huts in which they have lived during the winter, are burnt, the flocks are mustered and the heavy wooden saddles fitted on the mules and donkeys. All the shepherds' belongings

are piled high on these beasts: baskets, skins of cheese and wine, pitchers, barrels, copper boilers in which to store the milk and set the youghourt, dismantled looms, embroidered rugs and bags, brilliant with red, yellow, green and blue stripes. From the midst pop out the heads of two or three children, wide-eyed, serious and resigned. As the mules start, half a dozen fowls, hung head downwards from a hook, flap their wings and shriek.

The caravan hurries along the narrow dusty roads, the sheep trotting with their long muzzles close to the ground. If a car passes, they push each other, stumble and stampede.

The mountain sheep, all bone and muscle, are smaller and more compact than those of the lowlands. They are bred for milk and not for meat or wool. They are black or white or brindled and have a long, fine woollen coat,

In the 15th and again in the early 19th century bands of Greek shepherds and peasants known as Klephts waged guerilla warfare against the enemies of their country. Shown here are Klephts of 1821 pursuing an enemy in Epirus





Fox Photos

(Above) *In winter the flocks graze on rocky slopes at the foot of the mountains where even the peasant's pick cannot find a handful of soil; they chew the maquis—thyme and myrtle—tufts of grass and thorny plants growing among the stones. (Opposite) Peasant woman of the plains spinning. On her thread dangles a bobbin which she deftly winds as she pulls and twists the thread off the distaff*

not very thick. Their long legs carry them easily over the marshland and up thorny or rocky paths. Few of the ewes have horns, but the rams have great curling ones, which are sometimes broken to prevent them from killing their rivals.

The goats are like those of ancient legend, with long curved horns, short curling tails and shiny black or red hair. They refuse to be marched like soldiers. They will stop to look round, to pinch a tempting twig from a hedge, or jump off the road to nibble at the young corn or the tender vine. If they are scared they scatter in all directions.

All the bells worn by the flocks are muffled with leaves or paper as they cross the lowlands, and even the ferocious sheep-dogs trot meekly behind the shepherd. Often they travel by night and rest in the day-time.

Until the end of the 19th century, Greece was a predominantly pastoral country. In summer the shepherds grazed their flocks on the large forested areas of the mountains, and

in winter, when they came down to the plains, they hired good scrubland or patches of grass. Then, the shepherds were kings in the land. But the towns spread, new ones were built, and more and more land was brought under the plough to grow food for their inhabitants. It was at this time that the State took measures to prevent the rapid disafforestation of the country. The flocks were confined to narrow spaces. In the summer only the barren mountains were opened to them, some as free common land and some for rent. Nearly all the wooded hills were forbidden to them. So the shepherds set fire to the mountain forests, turning the great woods to ashes from which, in the next year, tufts of green grass sprouted. Heavy penalties were imposed for this offence and no flock might be grazed on burned-out forest-land for fifteen years. In the winter the shepherds were squeezed out onto the most barren stretches of the lowlands.

After the crop has been gathered the flocks are sometimes allowed to roam under the

olive trees or among the vines, where they snuff for a dried olive or a twig, or to graze across the harvested stubble. When the olive trees are pruned in the winter, the shepherds buy clippings to feed to the sheep and goats.

Usually, however, the shepherds spend the winter by the marshlands, or on the rocky slopes at the foot of the mountains where even the peasant's pick cannot find a handful of soil in which to sow a grain of barley. There the flocks spread out and nibble at the branches of the wild olive and the dwarf oak, and chew the plants of the *maquis*—thyme and myrtle—or the tufts of grass growing among the stones and from the cracks in the rocks. When the goats stand on their hind legs, however, to reach the branches of the cultivated olive trees, or the sheep break into a field under crop, there is a quarrel between shepherds and peasants that may end in a pitched battle.

As winter advances the scattered grass and the dry leaves get scarcer, twigs, branches, even the bark of trees, are all devoured and the beasts that survive, mere bags of skin and bone, wander about the bleak plains, bleating and miserable. When spring comes back again shepherds and flocks are like sailors going back to sea from a long spell on shore.

How miserable are the young men who dwell
in the lowlands!

Though they eat the best in the world, the
choicest in the land,

Yet they are dull and withered like the lizard.

But the young men who dwell in the moun-
tains are happy,

They eat the hoar frost and the cool winds
And they are beautiful like the fresh orange.

(Folk Song)

After a fortnight of journeying the flocks reach the foot of the mountains, where they wait and rest till the ewes have yeaned, for though the lambs and kids can skip and totter on their long legs they cannot walk far. But at last donkeys and mules are loaded up again and the caravan starts to climb. The mules, adorned with bells and coloured beads and led by a donkey, trotting along with short, quick steps, are goaded ahead by the women. The women cover their heads with scarfs, black if they are old, figured on yellow or white if they are young. They wear full skirts of heavy material with embroidered hems, fitting tightly round the waist and reaching to the ankle. They spin as they go, and when they reach their quarters, they weave the thread they have spun for their clothes, rugs, bags and soft blankets: in southern Greece they weave the men's close-fitting trousers of goats' hair and coarse wool,

and in Epirus, Thessaly and Macedonia, the tights worn with the fustanella. From the wool of their own spinning, too, they knit the innumerable vests worn by the men under their shirts.

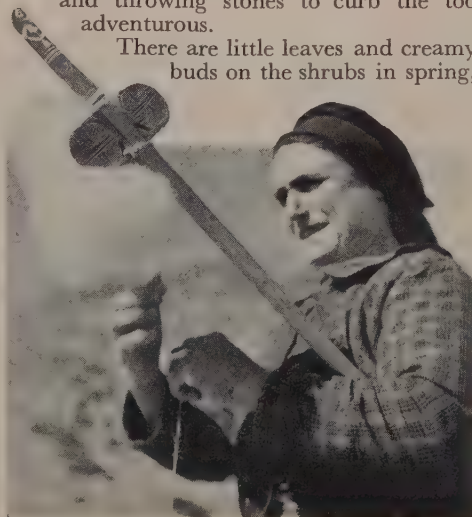
Mothers carry their babies on their backs, tightly wrapped in swaddling clothes. The younger boys go also with the women. They are miniature men, dressed like adult shepherds, with a skull-cap on their head and a collarless shirt with red and blue glass buttons. When they walk they sway back their heads and waists and scarcely tread the ground.

The flock knows the way. It is led by the *giousemi*, the sturdiest animals that carry the largest bells and walk slowly, dignified as patriarchs. The whole flock is divided into groups, and one beast in every ten or twenty carries a larger bell and is the recognized leader of its party. If the flock scatters, it scatters in groups, not individually, and the shepherd can find the missing animals more easily.

To choose the bells is no easy task. The shepherd goes to the back streets of the provincial town where the artisans beat copper into bells. The shepherd taps each bell, listening carefully to its sound. All the hundreds of bells of a flock must be in harmony. There are low-pitched and high-pitched bells, but none strikes a discordant note.

The shepherd sits on a big stone or snoozes under a tree from time to time and then takes a short cut to meet the flock. He runs to and fro goading the stragglers, whistling shrilly and throwing stones to curb the too adventurous.

There are little leaves and creamy
buds on the shrubs in spring,



Paul Popper

new grass on the ground and the trees and rocks are covered with fine moss. The flock treads on patches of yellow crocus, red and blue anemones, and thousands of other brilliant flowers, while the damp soil under their hooves cracks and is lifted by new coloured heads that seek the sun. The mountains wake out of their winter slumber as the high dales are filled with the sounds of bells, clear child voices, the yapping and barking of dogs, the crying of the ewes and the answering "baa" of the lambs, the shouts of the shepherds leading the flock: "Oi! oi! Roussa! oi! oi! Blacky! hurry along!"

Now it is April and joy, now it is Summer,
The nightingales say it among the branches
And the partridges among the hills,
The cuckoos say it in the highlands, high up in
the cliffs,

The flocks go up into the mountains for the
summering

And with them go the shepherds playing on
the flute.

They go to make cheese and to earn their
rent,

And to feast on St George's Day and to shoot
at the mark,

To drink the water of the mountains and to
take the air.

(Folk Song)

There are three kinds of shepherd in Greece. First, those who live permanently in the plains whose outlook and social position is hardly to be distinguished from that of their fellow peasants. There are, however, very few of these. Then the *karagounides*, about 900 families of Albanian-Vlach origin, half

peasants and half shepherds. In summer they take their flocks to the mountains, where they have either a permanent house or live in temporary huts built of branches. In winter they descend to the plains where their permanent homes are, their acre or so of arable, or a vineyard, or a few olive trees. Thirdly, there are the nomads, four or five thousand families of Vlachs and Sarakatsanides (also known as *Skintles*: tent-dwellers), mostly found in Epirus, Thessaly, Macedonia, Thrace and other parts of Continental Greece. They speak a dialect of Greek, but with many words to be found only among themselves. They have their own peculiarities of dress and custom. Ethnologists believe that the Sarakatsanides are the descendants of the nomad shepherds of Ancient Greece.

In southern Greece the old type of shepherd community is breaking down, but in the North it still holds. The flocks (*pinnia*) consist of about five or six hundred beasts each, and some ten flocks together are united into a *tselingáto*. The shepherds in charge of the flocks, the *tselingádes*, elect the *kehagiás*—usually a wealthy man owning several flocks—who is in charge of the *tselingáto* for the season. The *tselingáto* is formed just before lambing and dissolves at the end of the summer. The *kehagiás* is responsible for the provisioning of the community, fixes the price of meat and livestock, milk, yoghurt and cheese. He settles disputes with the authorities and the peasants and pays fines on behalf of the *tselingádes*. At the end of the season the profits are distributed.

Nancy Jenkins



The tselingás employs *pistikós* and *tsopánides*—journeymen and apprentice shepherds who do not yet own any beasts. They are clothed and fed by their master but seldom earn more than ten shillings a year in cash. Their status depends on their length of service and experience. A *tsopánis* may be the son of a rich tselingás who apprentices him out till he is of age and has gained enough experience to return to the management of his father's flocks.

In every tselingáto there are many related family groups and the bonds of relationship are strong. Within the family group the patriarchal system still prevails, and the most able of the elder males acts as the head of his children, grandchildren and their wives, families and other dependants. He settles family disputes, sanctions and presides on all social occasions.

The nomads regard the woman as inferior to the man, and require blind submission of her. Her husband is chosen for her by her family through the agency of the professional matchmakers and she is provided with a dowry by her father or brothers. Brothers may not marry till all their sisters are provided for. The unmarried girl who is unchaste, or the married woman taken in adultery, with their partners must be killed by the brother or husband responsible for their honour.

The men look after the flocks and herds, the women stay in the huts and cook, spin, weave and knit, and look after the children who are too small to help with the beasts. They carry on their backs enormous bundles of sticks for

the fire, or barrels of water from the spring. They go down to the stream with the family washing, which they beat clean with heavy wooden sticks in the running water, and bear it back piled high on their heads and spread it out on the bushes round the huts to dry.

The summer comes, accompanied in the plains by a grand orchestra of cigales, bobbing their backs rapidly up and down as they sing their unvarying tune which starts with a bold crescendo and ends diminuendo. Up in the highlands few cigales sing, but a million brown grasshoppers chirrup in the scorched grass.

Mules loaded with grapes, melons, figs and tomatoes come up from the plains followed by a crowd of children. When they stop, the crowd rings round to watch the muleteer weigh out the fruit in his brass scales.

At dawn the flock will stroll to the spring which gushes crystal-clear out of a rock or at the root of a plane tree. The boys climb the tallest and oldest trees and come down with great branches of mistletoe, which is reputed to be good for the milk. At noon, when the lowlands are hidden in the heavy heat-haze, men, flocks and dogs gather under the shade of the trees. But when the sun begins to sink behind the highest peaks and the valleys breathe cool breezes, the shepherd sits on a great rock and plays on his reed flute. One by one his beasts rise from their ruminations, sniff the ground and nibble the bushes, browsing peacefully while the shepherd pipes or sings some old song:

Opposite: left) Family
a Vlach shepherd. Old
women cover their heads
with black scarves, young
ones with figured yellow
and white ones. They wear
all skirts of heavy
material. 'Mother' reels
the thread she has spun
on the spindle; (right)
younglings and children
are piled on donkeys.
This donkey is covered
with sheep-skins. (Right)
Although the Vlach
woman works as hard as
her husband she is con-
sidered inferior and walks
while he rides



The brigands went up into the mountains to
steal horses
But they found no horses and they took my
flocks.
They took my sheep and my goats
And they also took my bell-wether with the
golden fleece.

Or a love song:

Beloved, when we kissed, it was dark,
Who saw us?
The evening star saw us, the moon saw us.
The moon leant down and told it to the sea,
The sea told it to the oar and the oar to the
sailor,
And the sailor sang it at the maiden's door.

Or a guerilla song:

They took Kitsos, they took him to the
gallows,
A thousand men before him, two thousand
behind him,
And far behind followed his wretched little
mother:
"Kitsos, where is your gun, where are your
bandoliers?
Where are your five golden buttons, black
with the smoke of battle?"

As night falls the charcoal burners working on the lower slopes see the fires of the shepherds leaping in the night and silhouetting the men standing round them. It is so calm that one may hear the earth breathe. Faintly, in the distance, the sheep bells jingle clear like a mountain stream with an occasional deep low note dropping like water. A rapid tinnabulation tells that a sheep has been scared by the night-owl. Sometimes a prolonged and sinister howl rises up to the sky amid a carillon of bells and the alert barks of the dogs. It is the wolf. The frightened flock huddles shivering together, scratches the ground with its hooves and gives its warning, a peculiar dry cough. The wolf steals up silently against the wind and, seizing the finest of the flock by the throat, kills it instantly, or falls upon a straggler and sucks its blood without devouring the flesh.

Sometimes the wolf creeps behind the mules and donkeys and attacks a foal or an old beast that has fallen back. When the shepherds reach the highlands in May they unload the mules and donkeys, remove the heavy saddles and then leave them to wander at will over the mountains: they are seldom guarded. The wolf cannot attack the herd, for when they scent his approach they whinny and beat the soil with their hooves and form a circle, heads inwards, with the young in the middle, showing the wolf a formidable array of heels.

The shepherds get up wolf-hunts. The hunters armed with rifles surround the wolf's

haunt, while the beaters descend into the ravines making a great din with shots, shouts and the beating of old saucepans, tins and bells. Foxes and mountain partridges rush out of the bushes. Then, with a great cracking of branches, the wolf is finally driven out of his thicket. "Oi! oi!" cry the hunters and the circle closes in on the quarry while the dogs bark in frenzy. The wolf makes from one lair to the other but at length the lucky shot is fired. The marksman cuts off the wolf's head and, putting it on a tray, bears it in triumph round all the shepherds' hamlets and even down to the lowlands, to the sound of violins, pipes and clarinets. Everybody shakes his hand, offers him wine and throws coins into the tray. The most generous are the owners of cattle and sheep.

When autumn approaches, all the fodder on the mountains has been devoured by the flocks—even the bitter leaves of the young fir trees. The clouds whose heavy shadows crawl from hill to hill at last end the long drought and, bursting suddenly, in a few hours turn the dry ravines into roaring torrents. The deep valleys sigh like Ocean when he rolls on a pebbled shore. Once more the shepherds burn their huts, muster the flock and load the mules. As they descend, so the air gets warm and heavy and the water springs tepid out of the earth and muddies as the sheep push and struggle to drink.

Now they can see the plain enclosed by a range of huge barren mountains, and between them glimpse the sea. The plain is brown and scorched by the fierce summer sun. It bears a few scattered pine trees, an olive grove or two, and in the middle runs the dry river, its bedrock white as a bone. At one end, tucked at the foot of the mountains, is a little bunch of houses with a window-pane flashing here and there in the sun. On the outskirts of the village is the church, whitewashed and sunny, the churchyard shaded and cool with trees. A lone cypress stands sentinel.

Winter is short but bleak and takes away men and women and many children. Fires are lit in the huts till they are choked with smoke, while the rain, now fine and persistent and now pouring down, drips through the soaked rugs which line the roof. Sudden squalls of wind rush into the sheltered hollow, shaking the huts and whistling through the holes in the walls. The children shiver and

The Greek shepherd learns to play his pipe to soothe his sheep. He is called in for festivals, when young men and maidens dance on the threshing floor



hide their heads in their mothers' skirts, clinging and crying. At twilight the whole family lies together on the floor, covering head and body with all it has and trying to forget cold, hunger and damp. When the snow covers the plains they can hear, in the distance, the howl of the wolf pack and the answering bark of the dogs.

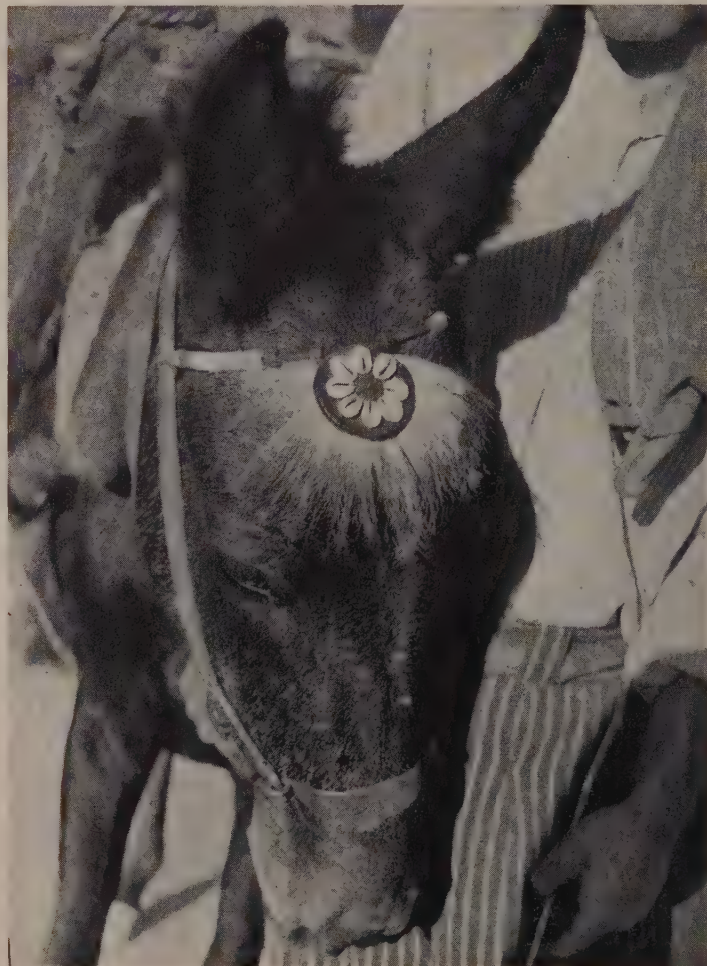
The flocks usually stay in the open in a fold, or huddle in the corner of a limestone cave shivering and crying lamentably. In the day-time the shepherds put on their thick hooded capes and, carrying their long crooks across their backs, lead the flock to the grazing ground.

After a few days of cold and wet, the clouds disperse and a bright warm sunlight sparkles over the land. The women hang out the damp rugs on every bush. The small children throw stones in the puddles and shout and laugh as they chase the chickens.

* * *

Why talk about the Greek shepherds today? Many of them are no longer shepherds. Their flocks were dispersed during the campaign, requisitioned by the enemy after the occupation, or starved. The shepherds armed themselves with rifles and took to the mountains. As in 1821, they form the backbone of the

guerilla bands. They know the mountains, the short-cuts, the caves, the springs. Their fellow shepherds find them food: bread, milk and cheese; keep them informed of the enemy's movements; warn them when to disperse and when to attack. Their women weave still, but for warriors not shepherds. Their children go down to the villages for news, or to fetch the doctor to the wounded *klepht* (guerilla) and the priest to the dying. The shepherds of Greece today blow up



Paul Popper

(Left) The donkey that leads the pack mules. The blue, pink and white beads and the medallion of cowrie shells form an amulet to keep off the evil eye

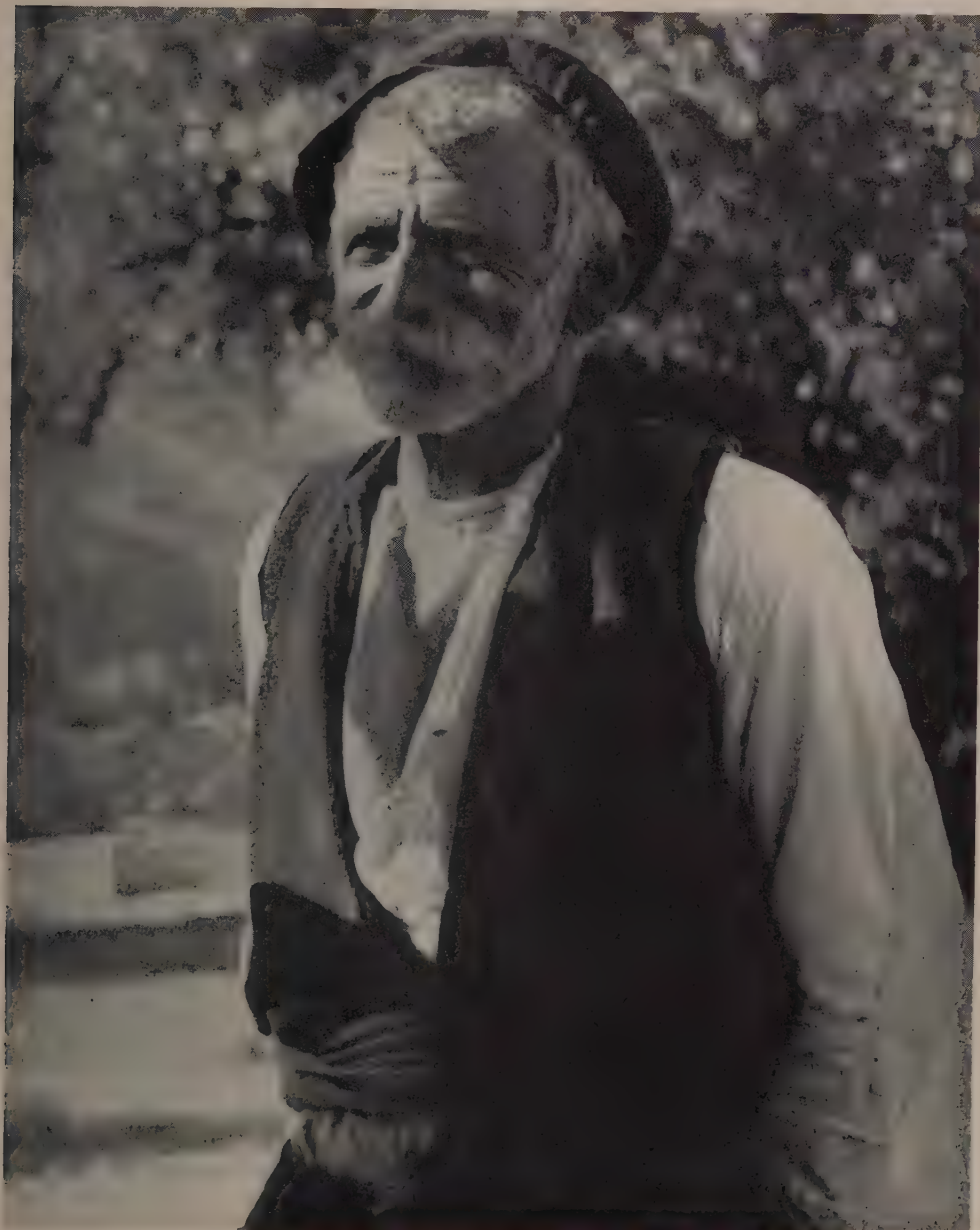
(Opposite) Shepherd from Epirus. He can handle a rifle as easily as a crook. As in 1821, many Greek shepherds have taken to the mountains and become guerillas

bridges, cut roads, attack armed units of the enemy.

Black is the life of the black klephts!
Never do we change our clothes, nor wear
white linen.
All day in the battle, all night in the ambush,

For twelve years I was a captain of the klephts;

I ate no hot bread, nor lay on a bed,
Nor had my fill of sleep, sweet sleep.
My hand was my pillow and my sword my
bed,
And my little gun my girl in my arms.



Nancy Jenkins

Selenography: the 'Geography' of the Moon

by ERNEST TILLOTSON

IN recent years the townspeople of Britain have taken considerably more interest in the moon than they did in times of peace. The power of the moon, our nearest neighbour in space, to diffuse light is, however, not its chief function, for the tides which cleanse our shores and give great ships access to many of our ports depend for their existence upon the attention of this, our only satellite, and, moreover, observations of the moon provide navigational data for mariners on the seven seas. What sort of an object is then this moon, whose importance is so much enhanced by the black-out? The study of it, which may be compared with the geography of the earth, is usually known as selenography.

The moon's mean distance from the earth is just over sixty times the earth's radius, which would make it about 250,000 miles. The sun is about 380 times further from us than is the moon.

The moon has no light of her own, and merely acts as a mirror for the sun's rays. The phases of the moon, caused by the relative positions of the earth, moon and sun, are well known, new moon occurring when the moon and sun are both on the same side of the earth, and full moon when the earth is between the sun and the moon. The moon is said to be in syzygy when it is new or full. It follows that the crescent is first seen like a sickle in the eastern sky after sunset, moving further to the east as it gets more full, until, as a full moon, it rises about the same time as the sun sets. At last quarter the moon is high in the heavens in the morning, the crescent becoming smaller and smaller as it draws closer to the sun, finally disappearing in the effulgence of our star. The first appearance of the crescent moon is especially important to the Moslems, particularly for the months of Ramadan and Bairam; from observations made with this in mind it has been found that the new moon may be seen when about twenty-four hours old and twelve degrees

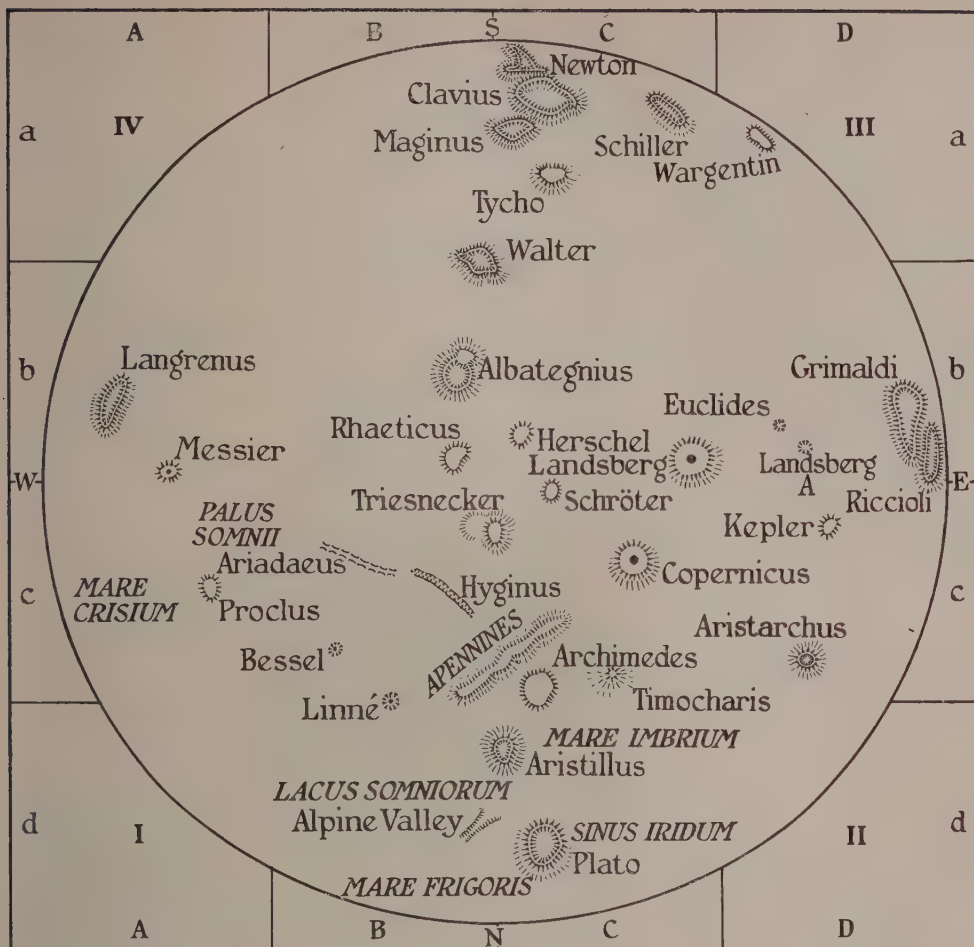
from the sun. In 1910 J. K. Fotheringham, the astronomer, dealing with Julius Schmidt's observations made in Athens, claimed that this was independent of differences in latitude.

The diameter of the moon is some 2160 miles and its mass is $1/81.53$ of the earth's mass. The mean specific gravity of the moon is about 3.4, compared with the earth as a whole 5.5 and the earth's surface 2.65.

THE ORIGIN OF THE MOON

The friction of the tides in the seas of the earth caused by the moon, may be calculated to have the effect of increasing the distance between the earth and the moon by about five feet every hundred years. Sir George Darwin calculated that the initial length of our day would be equivalent to about one-sixth of our present day, and the initial distance of the moon's centre from the earth's centre about 8000 miles. If we could go further back would they be united? Most cosmogonists think not, unless an extremely improbable though not impossible thing happened: namely that, during the course of evolution, the tides caused by the sun on the as yet molten earth had a period which exactly coincided with the natural free period of vibration of the mass of the earth, should this molten mass be set pulsating. This would, of course, set up resonance, giving tides sufficiently high to cause rupture.

Why, at the time when something happened to cause our sun to have a planetary system, twin bodies such as the earth and moon came out of chaos into being so close together and of sizes so nearly equal at the same time, is not yet fully understood; but that they did so seems more probable, according to present use of the available evidence, than that at some distant time the moon separated from the earth tidally. The earth may even now not be solid right to the centre. There is a large core which appears to possess the properties of a liquid in that it will not trans-



Stanford, London

The moon as seen in an ordinary astronomical inverting telescope, so that the north is at the lower edge. The map is divided into four sections vertically, the spaces lettered a, b, c, d, from south to north; and into four sections horizontally, the sections from west to east lettered A, B, C, D. A capital letter and a small letter together, thus indicate a particular square in which the feature may be found. An alternative index is obtained by dividing the whole map into four quarters through the cardinal points of the compass and numbering these areas I, II, III, IV, as NW, NE, SE, SW quarters.

Albategnius is a walled plain 64 miles in diameter. The most conspicuous range of mountains on the moon is the Apennines. In this range there are peaks $3\frac{1}{2}$ miles high, whose shadows extend over a distance, on occasion, of 100 miles. The Apennines stretch through two small squares Bc and Cc, i.e. from quarter I into quarter II. Landsberg is a ring plain 28 miles in diameter and it will be noticed that the lunar equator nearly passes through it. Landsberg A, a minor feature near Landsberg, is interesting as being a crater with a nimbus. Lacus Somniorum is an Alpine Valley with a bright grey floor. Messier, near the lunar equator, is a volcanic crater proper with a central peak. It is 9 miles in diameter and is a radiant peak for rays.

It must be remembered that if the moon is viewed with the naked eye, or with opera glasses, field glasses, or a terrestrial telescope, it will be the right way up and not inverted as in the map

mit transverse earthquake waves; but it does appear that the moon is now solid throughout its interior. The moon has a bulge towards the earth amounting to about one part in 1500. This, it has been thought, was caused by tides, for which the earth was responsible, when the moon was still molten; the earth-moon distance being then some 90,000 miles. At that time, the moon became solid and the bulge remained. This bulge on the moon is too great to have been caused since the time when the moon was more than 90,000 miles distant from the earth.

THE MOON'S SURFACE

The surface structure of the moon, comparable to the geology of the earth, may be called selenology. The selenologist must carry out his studies with a telescope, camera or other optical device, whereas the instrument most usually associated with a geologist is his hammer. The results of selenology are large-scale phenomena. We learn, for instance, the relative ages of the lunar formations such as that Aristarchus is younger than Kepler, and Kepler than Copernicus. Mr H. G. Tomkins has proposed that the dark substratum seen in various places at full moon especially in the maria, can be considered as a foundation on which all lunar formations are grounded, in order to correlate their ages over wide areas on the moon. He further suggests that the apparent mottling of extensive areas over the lunar surface may be comparable to pumice or volcanic ash, as suggested by Schönberg and Brunn, or that it may be an efflorescence rather than such a crust as is possessed by the earth. Whether or not there are fossils in the lunar strata, or what the mineral formations may be, we have no means of discovering. In 1787 William Herschel was actively engaged in England making observations of the moon with his telescope. We learn from *The Herschel Chronicle* (Cambridge University Press), edited by Constance A. Lubbock, that on May 20, 1787, he wrote to Mr Ernest, one of King George IV's Pages:

SIR,—Last month I discovered three volcanos in the moon, and saw the actual eruption, or fire of one of them; yesterday I examined the same place again and found that one of these volcanos is not yet quite extinct. Will you do me the favour to acquaint the King with these circumstances; if his Majesty would wish to see the moon, the best time for viewing the crater, which continues still to be considerably luminous, will be this evening between 9 and 10 o'clock.

I will be at Windsor in good time to see the King's ten-feet telescope brought out and

prepared, if it should please his Majesty to have it done.

I remain, Sir, your most humble servant,
WM. HERSCHEL

In view of the generally held opinion that the moon is now quite solid throughout, it appears unlikely that Herschel actually did view an eruption. Even at the time there were sceptics, for Laland in a letter to Herschel dated May 21, 1788, wrote: "Mt Aristarchus which is naturally very brilliant might well reflect the light of the earth in such a manner as to produce this bright appearance across the pale light of the moon". Maybe if there were radioactive materials near the surface of the moon, and the heat could accumulate, there might be some form of volcanic activity—but this possibility may be remote and it depends on a concatenation of circumstances any one of which may be absent.

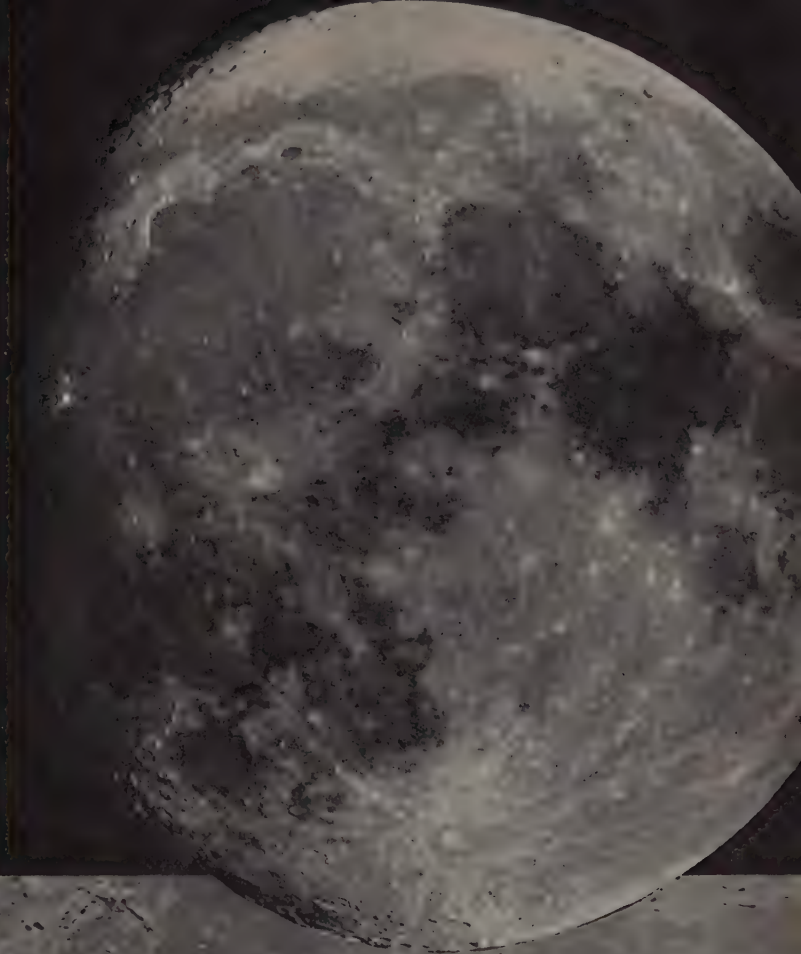
HOW, WHEN AND WHAT TO SEE

The physical features of the moon are remarkable and it would be no exaggeration to say that the moon is the most interesting of heavenly bodies for a small telescope. With a fair-sized telescope it is better to use a low power and a dark eye-piece cap rather than reduce the aperture, which affects the sharpness of the definition.

The moon is only three-quarters as bright in apogee (point of orbit most distant from earth) as in perigee (point of orbit nearest to earth), and should we not wish to see a feature which would then be in darkness, best viewing conditions are about the time of first quarter and last quarter, since the features are in greater relief especially near the terminator (dark-light boundary), on account of their shadows, than nearer to full moon. In the northern hemisphere the most favourable viewing conditions, on account of the moon's altitude above the horizon, are at vernal equinox for the first quarter and autumnal equinox for the last quarter, and vice versa in the southern hemisphere.

More than a hundred years ago John Russell, R.A., spent some twenty years making a careful drawing of the moon, though since that time photography has played a much more important part in this study. A catalogue of over 6000 named lunar formations was presented by Mary A. Blagg and K. Müller to the International Astronomical Union in 1932. Since the moon is approximately a quarter of a million miles from us, on looking through a telescope which magnifies, say, 1000 times, we should still see objects only as they would appear at a naked-

Two photographs of the moon taken with different magnifications. Notice particularly in the top photograph the rays from near Tycho in the south (in this view at the bottom) and from near Copernicus in the east (in this view on the left). Mare Imbrium is immediately north of Copernicus. The lower photograph shows the craters with their central peaks and the walled plains particularly well. Notice how later eruptions have breached the walls of earlier ones



eye distance of 250 miles. Thus only the most pronounced features are visible to us. At full moon contrast is lost and prominent objects such as Maginus disappear for two or three days before and after. Craters appear brighter than their surroundings. Linné shows some variation, and in the south-west portion of the moon the rays or streaks may be observed. Altogether about six-tenths of the moon's surface may be observed from time to time, while the other four-tenths have never been observed. The one-tenth is due to the apparent swaying of the moon, called the moon's libration, which is due to the inclination of its axis to its orbit. Owing to libration we rarely see a lunar object and its shadow in the same place twice, the maximum variation amounting to over twenty degrees. Objects near the centre of the moon (approximately equidistant from the three craters, Herschel, Schröter and Triesnecker) may be seen in their true shape, but nearer the limb more and more foreshortening occurs. Objects near the limb are in profile.

Early telescopists, using low-powered instruments, imagined they had discovered extensive seas on the moon, but more perfect and higher-powered telescopes have shown these features to be vast plains, by no means level or smooth, and possibly once the beds of lunar oceans. The Sinus Iridum, bounded by great cliffs rising to peaks over 16,000 feet high, is one of the finest objects and is best viewed when the moon is eight or nine days old.

Lunar mountains and mountain ranges are much more pronounced than terrestrial ones and some attain a height of five miles. These lunar mountains may be divided roughly into two classes. The first class consists of ordinary mountain peaks, ridges, hills and chains. Possibly the most conspicuous range is the Apennines in the northern hemisphere of the moon, which rises from the Mare Imbrium. It is about 600 miles long and the highest peaks reach a height of three and a half miles. The shadows from these mountains attain a length of a hundred miles as measured with a micrometer attached to a telescope. This may be verified by measurement of photographs.

The second class is composed of features conventionally called craters. These so-called craters may be walled plains, ring plains or craters proper. Walled plains such as Albategnius, Clavius and Schiller have a diameter, approximately, of between 40 and 150 miles. They are usually surrounded by a complex succession of walls, the floor being comparatively level, usually not much lower than the

outside, and the central mountain is often absent. Plato is probably the best example. The ring plains such as Kepler, Archimedes and Tycho, of diameter usually between twenty and sixty miles, form the majority of the so-called lunar craters. They are more uniform and circular than walled plains and are, more often than not, surrounded by a single mountain range. The outer slope is small and the terraced interior often steep. The comparatively level floor of the 'crater' is nearly always much lower than the outside; the deepest of this type is Newton with a rim 23,800 feet above the interior. Wargentín, however, which must be included in the group, has a floor which is practically level with the top of the wall. The craters which most nearly resemble terrestrial volcanic craters usually on the moon have a diameter of from four to twelve miles and a small floor with a volcanic cone. They are approximately circular with a steep outer slope. Examples are Messier, Bessel and Linné. These craters proper are usually characteristically bright which enables them to be recognized at full moon, and is a feature which probably caused Herschel to imagine they were actually in eruption.

Of the valleys, perhaps the most notable is the Great Alpine Valley, though the deep narrow winding rill of Ariadaeus, like the bed of a dried-up stream, can be seen with the aid of a two-inch telescope. The cleft of Hyginus, which may be seen with the aid of a similar telescope, is just east of the rill of Ariadaeus and is more like a crack in the smooth surface than a river valley. In a small telescope it is like a hair, but such markings are often from fifty to a hundred miles long and up to two and a half miles in width.

Faults or closed cracks in the moon's surface are also sometimes visible because one side is higher than the other.

Lunar rays are features peculiar to the moon. They are bright streaks which are best seen about the time of full moon (unlike other lunar features) and radiate from some of the principal craters. These rays are never above or below the general surface of the moon and traverse without a break all other features such as crater walls, valleys and 'seas'. No complete explanation of their existence has yet been given. Possibly the finest system of rays radiates from the lunar crater Tycho, in the southern hemisphere of the moon, though some other radiant points for rays are Kepler, Messier, Timocharis, Proclus and Aristarchus. There are others. The craters Euclides and Landsberg A are

surrounded by a bright patch sometimes called a nimbus.

In addition to the darkness of the 'seas' and the brightness of the rays and patches, and also the depth of lunar shadows, the variation of brightness and colour in different parts of the moon is most interesting to a careful observer with a small telescope. The brightness varies from place to place, Aristarchus being the brightest object on the moon and Grimaldi and Riccioli the darkest. The brightness also varies from time to time as on the floor of Plato, where it has undoubtedly something to do with the altitude of the sun. The floors of the 'seas' are also tinted with various colours, such as Mare Crisium grey-green, Lacus Somniorum bright grey, Palus Somnii bright yellow-brown, Mare Frigoris yellowish-green, and so on.

MOON MAPS

To enable lunar features to be picked out on a map, the map is divided into quarters by the lunar equator, which is drawn very nearly through Rhaeticus and Landsberg, and lunar longitude 0° which is drawn through the centre of Walter and the east side of Aristillus. These lines intersect near the centre of the moon's disc in mean libration and form axes of coordinates, the unit of reference then being one-thousandth of the semi-diameter of the disc. A less accurate though sometimes convenient method is to divide these quarters numbered I to IV (NW, NE, SE and SW) further into quarters by NS and EW lines, and the 16 approximately equal areas thus formed are lettered A B C D from west to east and a b c d from south to north.

It is usual to draw the map with west to the left and east to the right, south at the top and north at the bottom, since this is the way the moon is viewed in an ordinary inverting telescope.

The principal features have names of their own. Features near (or inside) a larger one, when not separately named, are denoted by the nearest named feature with letters after. Eminences are usually given small Greek letters only after their names, and depressions capital Roman letters only. Double letters are used to indicate small features near larger ones. The larger feature is indicated by the first letter. Rills have Roman numbers followed by the letter r. Landsberg A is a depression to the east of Landsberg.

NO ATMOSPHERE—AND THE CONSEQUENCES

The moon has no atmosphere. When it passes in front of a distant star the star dis-

appears from view for the whole width of the moon even though only part of the moon's width may be illuminated. The process is like an eclipse of the star but in this case is called occultation. Occultations of stars are frequent. For example, on March 12, 1943, at 16h. 40.2m. U.T. α Tauri disappeared behind the moon. It reappeared on the same evening at 17h. 51.8m. U.T. Times of occultation are given in the nautical almanac. The disappearance or immersion of the star always takes place on the east side of the moon and the reappearance or emersion always takes place on the west side. The immersion and emersion are always instantaneous and there is no gradual falling-off of brightness as there would be if the moon had an atmosphere. Occasionally a star seems to hang for an instant on the limb as though it may have chanced on an irregularity of the moon's surface, though this is exceedingly rare.

If this lack of atmosphere on the moon were not at once apparent by direct observation, including the occultations of stars by the moon, we could have deduced it from observations of the moon's gravitation and the velocities of molecules of the gases in possible atmospheres. For example, having obtained the mass and dimensions of the moon it is possible to calculate, using the known gravitational laws, how fast any object at its surface would have to be moving away from it in order to leave the surface and never return. This is called the velocity of escape and for the moon it is 2.4 kilometres per second. The dimensions of the moving object do not matter. Gravity has no favourites. The mean molecular velocity for hydrogen is 1.84 km./sec. at 0° C. and, since even if the escape velocity is four times the mean velocity of the molecules the atmosphere would be almost completely lost in 50,000 years, the moon now would have no hydrogen in its atmosphere even if it had any initially. Moreover, the mean molecular velocity of a gas is proportional to the square root of its absolute temperature, and thus, on account of the sun's rays warming up the atmosphere, the hydrogen would be doubly sure of escaping the moon's gravitation. Further, as the mean molecular velocity is inversely proportional to the square root of the molecular weight of the gas, the moon would also lose nitrogen, oxygen and water vapour, but would retain carbon dioxide unless at some time in the past it were much hotter to increase the speed of the carbon dioxide molecules. Escape, of course, could be hindered by collisions with other objects and other

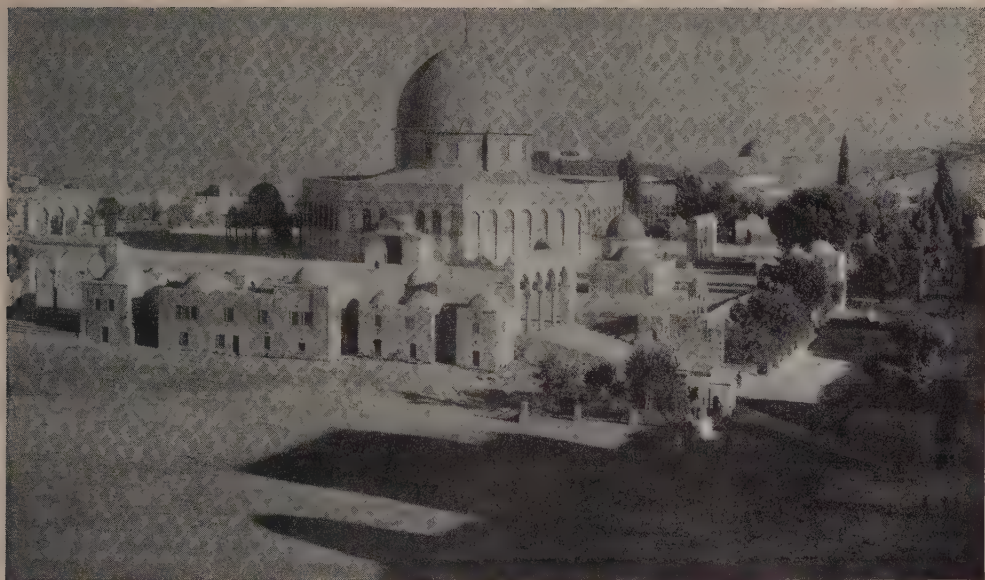
molecules but would scarcely be prevented from taking place eventually. Thus we deduce by this indirect method the conclusion that the moon has no atmosphere.

Mr H. G. Wells in his phantasy of the moon imagined an underground atmosphere in caves and tunnels but we have no means of observing this. As there is no atmosphere there can be no wind, and with no water vapour there can be no rain, no ice and no snow. Ordinary denudation and the morning 'stone showers' known in mountainous districts on the earth would be absent on the moon. There can be no rivers on the moon, no lakes and no real seas. In the mountainous districts there may be evening 'stone showers', as these are caused by the variations in temperature. At the time of high noon on the moon the temperature may attain some 120° C. as there is no atmospheric protection from the sun's rays, and this temperature is also suggested by telescopic bolometric and thermopile measurements. At the time of the moon's night the temperature may fall well below 0° C. Should particles of rock high on one of the mountains of the moon become dislodged by the differences in temperature working on crystals of different expansibility, the particles would fall to join others on a scree at the foot of the slope, but only gravity would then act to move them further, for there would be no wind, rain or river action. The angle of rest for the scree would be quickly attained. Changes on the moon's surface might thus be expected to be very very slow and slight, and certainly would not be noticeable at our distance for perhaps thousands of years.

There being no gaseous envelope on our satellite, there is unlikely to be any plant or animal life at its surface. Professor Turner thought that there might have been life on the moon at some distant time, though what grounds he had for this belief I do not know. Jules Verne wrote an acknowledged fantasy on the moon, but the great lunar hoax of which the *New York Sun* published 60,000 copies in September 1835 must rank as one

of the greatest of all time and is still talked about in America. It is not so well known in Great Britain, though an English edition of the paper was published in 1836. The author is unknown, though it may have been Nicollet, and it was possibly translated from the French by Richard Alton Locke, who may have added parts of his own, since there appear to be passages unlikely to have been written by an able astronomer. The hoax concerns a telescope alleged to have been invented by Sir John Herschel (son of William) and Sir David Brewster and first turned on the moon on January 10, 1835. This instrument is stated to have enabled the two astronomers to see everything on the moon, including the vegetation and animals. Vegetation is fully described, including rose poppies and trees. The animals are also described and include brown quadrupeds like bison. There was stated to have been seen a large amphibious creature rolling on a beach, good large sheep and even *Vespertilio-homo* or bat-men, four feet tall, who could fly or walk erect. They were alleged to be covered with glossy copper-coloured hair and were seen near the shores of Lake Langrenus. All was described as by an eye-witness had he been with Sir John Herschel on the night of January 10, 1835. Of course it was all false and Sir John Herschel and Sir David Brewster knew nothing about it, but the *New York Sun* sold the whole edition of 60,000 copies and perhaps Nicollet had a laugh over the supposedly credulous Arago, who was obnoxious to him. Whatever the true story, we believe that there can be no life on the moon.

It is said that the sun gives us 570,000 times more light than the moon—also that the average slope of the lunar mountains is 47°, thus giving much more light to us by reflection at full moon than at other times, even allowing for the area visible. But for little or much moonlight on black-out nights we echo the words of Hippolyta in Shakespeare's *Midsummer-Night's Dream*: "Well shone, Moon".



A. F. Kersting

Discovering Jerusalem

by Captain QUINTIN HOGG, M.P.

JERUSALEM has existed as a fortress from the earliest times and, in spite of numerous wars, its history was fairly continuous up to the reign of Hezekiah. The Bible story refers to Melchizedech, Priest-King of Salem, who brought Abraham gifts of bread and wine, and when David reigned three centuries after, his priest, Zadok, appears to have retained the same name. The Tel El Amarna tablets contain letters to the King of Egypt from the ruler of Urusalim in about 1400 B.C. at the time of the Hebrew invasion of the Holy Land.

Jerusalem is not merely a strong natural defensive position, it is placed conveniently on the two ancient roads of Israel, the first beginning at Hebron and working north by Nablus and Samaria to the eastern part of the plain of Megiddo; the second passing from the coastal plain east across Jordan to Transjordan. It was no doubt for its defensive strength that Jerusalem held out as a Jebusite stronghold long after the invasion of Palestine by the Israelites, and it was partly for this and partly for its economic value as commanding the trade routes that King David selected it as the capital of his kingdom. At that time the hills of Moab across the

Jordan were in the hands of a hostile power and the coastal plain was dominated by Philistines and Phoenicians. The capital of the Israelitish kingdom had therefore to be placed in the hills.

From the modern point of view, however, Jerusalem is an inconvenient capital. The economic life of the country depends upon the 'L'-shaped piece of low ground constituted by the coastal plain and the plain of Megiddo joining approximately at Haifa. The Romans governed the country from Caesarea on the coast, and to this day Jerusalem suffers from inferior communications. A traveller by rail has to climb laboriously out of the main-line train at Lydda and make his way up a side line through the hills at a funereal pace, punctuated by the hideous din made by the Arab driver on the train's whistle. The ground is unsuitable for air communications; the airport is not much more than a landing ground; small, dangerous and close to the road, it is scarcely ever used. Air passengers from Beirut or Cairo are put down at Lydda and normally travel the rest of the way by car. Road communications are the best, but even here the most convenient road to the north leaves the city



Dorien Leigh

The narrow streets and stone arches of the Old City of Jerusalem (above) strike a medieval rather than a characteristically oriental note. (Below, left) Jewish cemetery and Absalom's tomb seen from the Mount of Olives; (right) the narrowness of the streets and the changes of level forbid motor traffic in the Old City



Dorien Leigh

due west in order to reach the coastal plain at Ramle. This route is well known to Ninth Army drivers as the 'Seven Sisters', from seven spectacular corkscrew turns in the road where it passes over the hills. The chief alternative road north travels only as far as the plain of Megiddo, when it, too, has to turn to the coast at Haifa. Only travellers for the inland parts of Syria or those who wish to visit the battlefields of 1941 near Marj Uyun go due north by the inland road, and they find it inconvenient. The country immediately to the east of Jerusalem is desert and, beyond the Jordan, independent of the Jerusalem administration.

In spite of these disadvantages the British followed tradition in 1918 in making Jerusalem the capital of the country. The High Commissioner's attractive white residence stands south of the city, with a fine prospect over the city itself, the Mount of Olives to the north and the hills of Moab to the east.

There is often something slightly tawdry about a new city with historic associations. One supposes that there had to be a 'King David' Hotel, and the 'Eden' is justified by many Continental analogies, but is the 'Zion' Cinema really tolerable? Fortunately the natural configuration of the ground has left the old city more or less unblemished. It is isolated by the Cedron Brook, and by the valley of Gehenna which leads up almost to the Jaffa Gate, and only between this gate and the Damascus Gate are the old and the new cities at all closely united. Even then, the old city is to a large extent sealed by its walls. Mercifully, the railway does not come into the town, and the shops and modern



buildings of the new city are well set back from the view of the old.

The new city is largely inhabited by Jews of European origin. Apart from English, commonly not understood, German is the language in which the British officer can most certainly make his needs known. The Slav languages and Yiddish are also used. Hebrew appears to be cultivated as a *lingua franca* among Jews. It seems to the stranger to be spoken naturally in Jerusalem little more than is Erse in Dublin. As in Dublin, however, newspapers and shop signs make up for lack of the spoken word and one is constantly assured that the children speak it among themselves. In addition to the Jews there is, of course, a considerable Arab population, but there are no signs of *rapprochement* between Arab and Jew.

In 1941 Jerusalem was not merely a political centre; it was the military H.Q. from which Sir Henry Maitland Wilson's campaign against Syria was directed. It was also the site of military hospitals and a convalescent home and a place much visited by officers and men of the Allied forces on leave—some from as far afield as Egypt and Libya.

A scratch on the knee brought me to Jerusalem in the summer of 1941. Illness kept me there for a month and I was able to visit it in the course of duty three or four times during the year that followed. During my convalescence I was able every day to make my way from the requisitioned Italian hospital in which I was placed to visit one or more of the places of interest.

The old city, I found, is a more or less completely unspoiled example of the medieval walled town. The fortifications are almost as unspoiled as those of Aigues-Mortes in the South of France. One of my earliest trips was to make my way slowly round them, first on the outside and then on the inside, starting at the Jaffa Gate. The walk round the part between Zion Hill and the Wailing Wall gives almost the impression of a contemporary fortification.

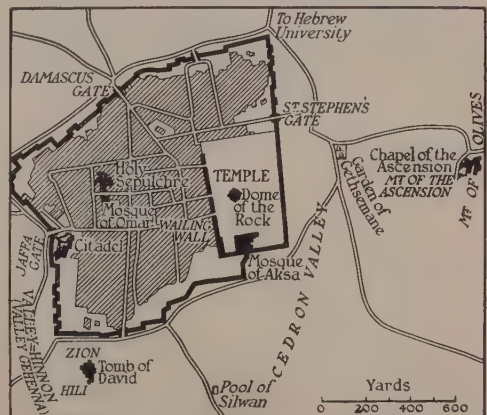
The interior of the town is medieval rather than ancient and seems to preserve a western flavour in spite of its oriental inhabitants. The narrowness of the streets and the changes of level have happily made motor traffic impossible, and so far only a Kaiser William II has been foolish enough to disregard the sentiment which makes one prefer to travel on foot.

In the sacred places either an extreme of simplicity or an unlimited power of concentration is required if one is to forget the tawdry decoration, the covetous guides,



Stanford, London

the doubtful authenticity of the sites and the squabbles of the sects. It is of course possible to cast too much scorn on traditional identifications. But it is, one feels, faintly ridiculous to be shown a first-story chamber said to occupy the same cubic space of air as the Upper Room in which the Last Supper was held. The cynic may observe, it gives rather too conveniently onto the alleged tomb of David included in the same guides' fee of 100 *mils*. It may be that the house of Caiaphas now



Stanford, London



A. F. Kersting

The buildings of the New City (seen here from the citadel) are separated from the Old by the nature of the ground. Only between the Jaffa and Damascus Gates are the walls contiguous with the modern town

in an Armenian monastery is not accurately identified, or that the little subterranean rock chamber shown as the actual prison in which Our Lord was confined, is not the actual place where it happened. None the less, a degree of probability is retained.

The main features such as the Temple area (shown in the illustration on page 233), and probably the main gates and streets, are

fairly certain. Zion Hill, the Cedron Valley and the valley of Hinnom are unmistakable, so that in general many of the places cannot be far wrong or at the most only out by a few hundred yards. The prison chamber is obviously of the right date and approximately in the right place. It is, I felt, mere pedantry to inquire further: it must have been just like that.



A. F. Kersting



Dorien Leigh

(Left) The Arab and (right) the Jewish quarter. In the Old City relations between Moslems and Jews are fairly good. Outside, where the Jewish element is represented by recent immigration, war has not assuaged the hostility between the two communities

The authenticity of the site of the Holy Sepulchre will, I suppose, always be in dispute. Probability remains in favour of the spot chosen by tradition, in spite of the fact that it is demonstrably not outside the present city wall. This wall was built by Crusaders and was therefore presumably intended to include the Church, since the object of their journey had been to protect this very place by fortification.

The actual site has been continually venerated as the true one since the time of Constantine, and as at that time the true position could have been identified, and was probably preserved by Hadrian's erection of a Temple of Venus on what was then supposed to be the spot, there seems little reason to disbelieve the accepted view. All the same, the so-called 'Gordon's' tomb, outside the Damas-



(Opposite) *St Stephen's Gate.* (Right) *The Mount of Olives, from the City Wall.* *The Church of All Nations is on the left; the Russian Church within the Cypress grove*

cus Gate, retains more of what one imagines to be the original atmosphere and it requires a good deal of piety to gain any feeling of inspiration from the Church itself.

By far the most beautiful monument in Jerusalem is the Temple, which occupies almost the entire site of the old city above Cedron and looks out clear to the east to the Mount of the Ascension and the Mount of Olives.

Not a trace of the old Temple remains at ground level. On the outside, however, and at the Wailing Wall the huge stones of Herod's Temple make even the massive work of the Crusaders look puny. At the Wailing Wall the Jews believe that some of the lowest courses belong to Solomon's Temple. At present the site is occupied in part by the Mosque of Omar, and a Church of the Virgin Mary also now converted into a mosque.

The Moslems have had this advantage over the Christians. Their iconoclastic tendencies keep their shrines fairly free from tawdry rubble, and the unity of their control preserves some semblance of order and decency.

In the centre of the Mosque of Omar is a huge sacrificial stone of immense antiquity with a hole in the middle for blood, and channels running right down the pools outside the city. This is the traditional place at which Abraham offered Isaac as a sacrifice. It is venerable and interesting enough in itself without the accretion of legend.

The old city is best viewed from outside. The view across the Cedron from the Temple site to the Mount of Olives is among the most beautiful of any city in the world, and here at least the traditional identifications cannot be far wrong. Here is the place where Jesus wept over the Temple and the city, and, whether it was a few steps up or a few steps down, the present path must be about where the old path was. The Mount of Olives taken leisurely is practically a whole day's excursion, although it is only a few minutes' walk from the city itself. It is best to ap-



Dorien Leigh

proach it out of St Stephen's Gate and from the valley of the Cedron. Just after the beginning of the ascent is the Garden of Gethsemane, very small, very well kept, very gay with geraniums. The old olive trees are said to go back for two thousand years, and as far as one can see there is no reason why this should not be so. If this is not the original Garden, what does it matter? It must be within a few hundred yards of the right spot.

Unhappily, even the Mount of Olives is disfigured by two monstrous modern buildings. The older is a Russian church, half-way up, inhabited by some charming Russian Sisters who keep it spotlessly clean and say a graceful *spasibo* for the humble offering. There is something pathetic about these exiles, the last relics of a Russia that has disappeared, passionately and piously tending a building that should never have been built.

The other unsightly accretion is the Church of All Nations kept by the Franciscans, near Gethsemane, built, it is sad to relate, since the last war. It is a multi-domed affair, each dome apparently having been given by a separate European government. The interior is filled with a horrible purple light from over-coloured windows.

All these places would have been better left open to the winds of heaven; but if buildings have to be erected, the little Byzantine chapel of the Ascension, now in the hands of the Moslems, is a better example of how things should be done.

The Moslem keeper told me that both Islam and Christianity believe that Jesus ascended into heaven at this spot. The

difference was, he said, that the Moslems did not believe that Jesus had been crucified. At the time I was sceptical about this alleged difference but I discovered afterwards that it is a fact. Islam as a whole has accepted a theory offered by a heretical Christian sect that a mirage only was crucified and that Jesus Himself was never offered up.

On the top of the ridge is a beautiful double view: to the west, of the old city; to the east, over the Dead Sea, gleaming blue in the yellow desert under the hills of Moab. Hard by is a beautifully-kept Greek monastery church. Not knowing that it was private I made my way in, and an apostolic bearded figure, sitting in a deck-chair under the orchard trees, smiled at me as I went by. I returned in a wide sweep, taking in the

(Below) Church of the Holy Sepulchre. The outer fabric is now protected by scaffolding and cannot be repaired owing to disagreements between Christian sects. Inside (opposite: bottom left) there is little trace of simple piety in this vast accumulation of ecclesiastical furniture; (bottom right) Greek Church in a corner of the Old City; (top) looking from the Damascus Gate to the Mosque of Omar, which occupies the most imposing site in old Jerusalem



A. F. Kersting

Hebrew University and the British War Memorial on my way.

There is another view of the old city from outside which is well worth seeing, that is from Silwan (Siloam), which lies at the foot of the City of David at the junction of the two valleys. Here indiscretion and the charm of the surroundings led me to take coffee at an Arab café, where I became popular by the unflinching device of standing drinks all round. We smoked a hubble-bubble, a technique I always found it difficult to master; embarrassed as I always am by fear of infection from the mouthpiece.

Of all the sites round Jerusalem probably the best kept and the most attractive is Bethlehem, where the Church of the Nativity retains the simplicity of a Roman basilica and would be a building of splendid dignity were it not for the rival establishment set up by the Roman Catholics immediately to one side of it. The Church of the Nativity is entered by a door, kept disproportionately small in order to prevent desecration by Moslems. Recent work has uncovered 4th-century mosaics beneath the level of the floor and these can be seen as evidence of the early date at which the site was identified. The English visitor looks up with respect at the roof of English oak, provided in the 15th century by Edward IV. The grotto presents many of the unattractive features of the Church of the Holy Sepulchre. A guide, more imaginative than most, took me from it to a stable near by in which hens were running in and out and a donkey was tethered. He said, in effect, "This is what it really looked like."

The women of the town bear obvious traces of their Crusader ancestry, both in their faces and in their headdresses, which are obviously of medieval European origin.

Another happy day I spent at 'Ain Kearim, the traditional home of the Baptist, where a hospitable English lady made travellers welcome at the Anglican hostel. But by this the scratch on my knee had healed, and the fever had abated. The time approached for my return to Egypt and thence to the doubtful pleasures of the Desert Railway and the escarpment above the coastal plain.

Jerusalem, after a stay in even so westernized a city as Cairo, was to me like a return to Europe, and the visit to Palestine itself a return to European scenery in a setting of eastern manners and customs. There will be many besides myself who carry away with them happy memories of a short stay there in the middle of the grim and often boring business of modern military organisation.



A. F. Kersting



A. F. Kersting



A. F. Kersting

The Gilbert and Ellice Islands Colony

by Sir HARRY LUKE, K.C.M.G., D.Litt.

The Gilbert and Ellice Islands, which since the entry of Japan into the war have been the scene of frequent air and naval operations in the Battle for Australia, are one of the least known outposts of the British Empire. As Governor of Fiji and High Commissioner for the Western Pacific from 1938 to 1942, the author of this article had unique opportunities of studying the islands and their people



THERE are several unusual features, and some that are unique, about the Gilbert and Ellice Islands Colony. In the first place, it is the only territory which straddles both the equator and the International Date Line. It is therefore, with Fiji, the first part of the British Empire to see the sunrise. Its capital, Ocean Island, a small isolated speck of phosphate, lies about 250 miles from the Gilberts Group proper and some 2000 miles from the Colony's easternmost outpost, Christmas Island. Its total land area is only about 400 square miles, one-half of which is contributed by Christmas Island alone; but its land and sea area amounts to one million square miles, so that it has probably the greatest proportion of sea to land of any political unit in the world.

The Colony has five clearly marked divisions: the Gilbert Islands proper; the Ellice Islands; Ocean Island; the Phoenix Group; and, away to the east and immediately to the south of Hawaii, the three detached islands of Washington, Fanning and Christmas. The Colony forms a part of the jurisdiction of the High Commissioner for the Western Pacific (who is also Governor of Fiji) and under him is administered by a Resident Commissioner stationed at Ocean Island. Two of the eight atolls of the Phoenix Group, Canton and Enderbury, have, since 1939, formed an Anglo-American Condominium. The Tokelau or Union Islands, situated between the Phoenix Group to the north and Samoa to the south, formed a part of the Colony until 1926, when they were transferred to the Dominion of New Zealand.

The only feature which this widely scattered congeries of islands has in common, other than its political allegiance, is the fact that with the exception of Ocean Island it consists entirely of coral atolls. This fact is responsible for the Colony's small land area, for the atoll, built up by the coral polyp on the lips of the craters of submerged volcanoes, is in effect a thin ring of low-lying coral rock, ranging in width from 400 to as little as 200 yards from beach to beach. This ring is usually broken up into fragments, for the lagoon which it encircles—originally the crater of the volcano—is generally connected with the outer sea by a number of passages navigable by canoes and sometimes by ocean-going steamers. The lagoon may be several miles in diameter; and, as the coral atoll stands only about 15 feet above sea-level (for the polyp dies on reaching the surface), it is often impossible to see across it.

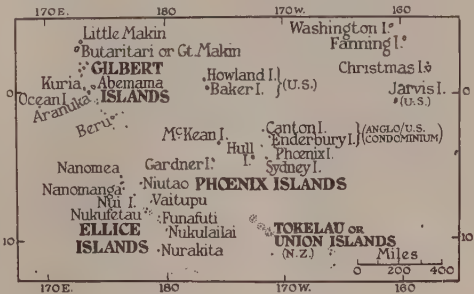
The Colony's population, approximately 36,000, is composed of Micronesians and Polynesians; the third of the main races of the Pacific, the Melanesians, are not represented. The Ellice Islanders are Polynesians; the Gilbertese and the natives of Ocean Island, who are known as Banabans, are Micronesians. The Micronesians, who also inhabit the British mandated island of Nauru and the Japanese, once mandated, Mariana, Caroline and Marshall Islands, are a smallish, copper-coloured, generally thin-lipped people with hair as black and lank as that of the Chinese. They made their way into these atolls in their ocean-going canoes (which they still build) from south-eastern Asia, passing

in the course of their wanderings through the Philippines and the East Indies, and absorbing on their way some of the blood of the countries through which they passed. The Gilbertese are, on the whole, a reserved, sometimes a dour people, in temperament the converse of the Ellice Islanders, who, of all the Polynesians I have met, are the most vivacious, exuberant and demonstrative. The two peoples speak entirely different languages.

I have sometimes wondered at the ebullient spirits of the Ellice people in view of the hard lives which niggardly nature compels them and the Gilbertese to live. For the coral atoll is not the tropical paradise of the story-books. Far from it. It has no soil other than a light sprinkling of coral sand, and it grows naturally nothing but the coconut and the pandanus palm, elsewhere sometimes called the screw pine. In pits specially hollowed out of the rock the inhabitants are sometimes able to raise a tuber called *babai*, which is a coarse variety of the dalo or taro (*colocasia*) so plentiful in the volcanic islands of the South Seas. These apart, they depend for their food almost entirely on the fish they catch; and when there is a drought and the coconut crop threatens to fail, they live perilously near the borderline of starvation. When the crop

actually fails, as I have known it to do, they live well below that borderline. In one of the islands which I visited during the drought year of 1939 I was presented with some napkin rings made of sections of coconuts cut at their widest part. The normal coconut would be at least three times as wide as these pitiful famine nuts.

But austere as are their lives and scanty their resources, the Gilbertese and the Ellice Islanders are politically remarkably advanced for primitive peoples, a condition they do not owe to the impact of the white man. In each of their atolls they have evolved for themselves an admirable form of self-government, with elective Magistrates and Headmen, the latter





Sir H. Luke

(Above) Gilbertese youths—Micronesians—in a sailing boat of European build; (below) Ellice Islands women in dancing dress;

(right) straight-haired Polynesian girl

Sir H. Luke



known as *kaubure* in Gilbertese and *faipule* in Ellice. There are also in each island a Head *kaubure* and a Native Scribe; and this organization, which dates from before the advent of the European, now functions under British rule with a maximum of efficiency and the minimum of European guidance and supervision. Administratively these islands are not unlike the city republics of medieval Italy on a minute scale. Each island Council or 'native government', as it is called, has the power to make its own Regulations subject to the approval of the District Officer.

* * *

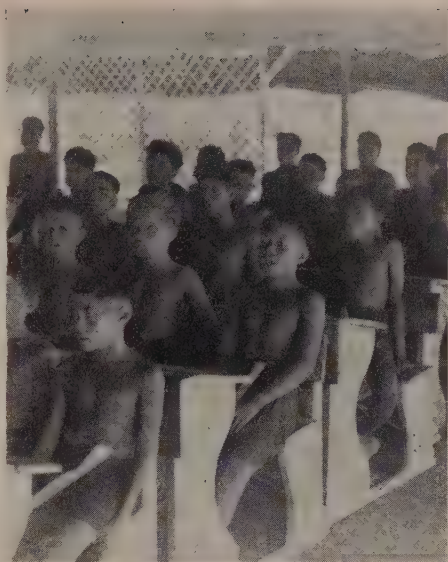
It is possible that the first white man to sight the Gilberts was the Spaniard Alvaro de Mendaña, who discovered the Solomon Islands in 1567. According to firmly held local tradition, a man with white skin, red hair and a red beard was washed ashore in a boat shaped like a box on the island of Beru in the Gilberts in what would have been the second half of the 16th century. He may have been one of Mendaña's men, and was discovered in a half-famished condition; but he recovered sufficiently to marry eight sisters of a local headman and to beget twenty-three children, whose descendants are now scattered throughout the Group. The official discoverers were various British naval officers who in the sixty years between 1764 and 1824 navigated these waters; they included Captains Gilbert and Marshall, after whom those Groups are respectively named.

Apart from the activities of the red-bearded gentleman, the first impact of the white man on the inhabitants of these atolls was no more happy than it was elsewhere in the South Seas. The friendly, trustful and tractable



Ellice Islanders in particular fell a prey to the villainous 'blackbirders', those kidnappers of black labour drawn from the scum of white humanity, who in the earlier part of the 19th century terrorized so large a part of the Pacific and were responsible for so much of its depopulation. While dark-skinned Melanesians from the Solomon Islands and the New Hebrides were forcibly impressed for labour in the canefields of Queensland and Fiji, and that beautiful people, the Marquesans, was almost entirely extinguished by deportation to work on the guano deposits of South America, so were the fair-skinned, gentle but sturdy Ellice Islanders snatched away to toil and perish in the plantations of Mexico and Guatemala. For only an infinitesimal portion of the blackbirders' victims ever saw their homes and families again. And the blackbirders, whalers and other adventurers also introduced the white man's diseases among primitive peoples whose blood was so pure that they had not developed the anti-toxins necessary to resist them. The result was that such illnesses as measles and influenza spread like wildfire in the atolls and wrought havoc among those whom the blackbirders had left behind. The Gilbertese, being better fighters than the Ellice Islanders, were able more effectively to resist the slavers' onslaughts; but it is reckoned that the population of the Ellice Islands, now a little over 4000, stood at the beginning of last century at 20,000.

During this period the international status of these islands may be described as a political vacuum. Some of the atolls were controlled by wandering white sailors and traders, others by missionaries beginning to bring to the inhabitants Christianity and education, some by the "native governments" already referred to. To these little democracies there were, however, in the Gilberts two exceptions. In the two northernmost of the Gilbert Islands, Little Makin and Butaritari or Great Makin, there reigned a dynasty of High Chiefs, while at Abemama and its two satellite islands of Kuria and Aranuka in the Central Gilberts there held sway another branch of the same family. In a chapter of his book, *In the South Seas*, Robert Louis Stevenson paints a graphic picture of the last kings of the Makins and their bloody rule, and devotes seven chapters to King Tembinoka, the greatest of the rulers of Abemama, in whose island he had lived. Tembinoka had a real affection for Stevenson, and Stevenson had an undoubted regard for the King despite the latter's violent and obvious faults. Tembinoka was the highlight of the dynasty, whose independence did



Trafford Smith

(Above) A class doing part-singing in the Government boarding school at Vaitupu, Ellice Islands. (Below) Gilbertese boys drilling at the Bairiki Government school

Trafford Smith



not long outlive him. But the family still survive, without official authority but with certain rights and precedence and land; and I have known in Abemama one of the two survivors of Tembinoka's numerous wives.

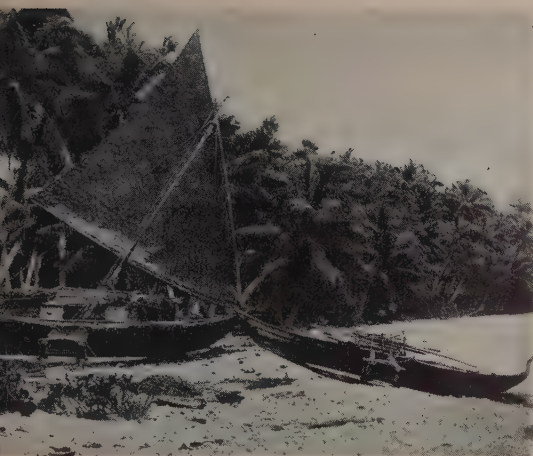
A British Protectorate was proclaimed over the Gilbert Islands at Abemama in May 1892, and over the Ellice Islands in September of the same year. The Protectorate was extended to Ocean Island in 1900. So acceptable did British rule prove to the people that it was not long before each one of the native governments expressed the desire to be formally incorporated in the British Empire. It is not always realized as widely as it should be how many parts of our colonial Empire have come under the British Crown at the express desire of their inhabitants, sometimes against the wishes of the British Governments of the day. A case in point in the Pacific was Fiji, whose Chiefs asked for annexation fifteen years before their prayer was granted. The Gilbertese and the Ellice Islanders had not so long to wait. The two Groups were annexed at the end of 1915 and with Ocean, Fanning and Washington Islands were constituted into the Gilbert and Ellice Islands Colony in January of the following year. Christmas Island was included in 1919 and the Phoenix Group in 1937.

The Gilbertese are among those Pacific peoples who have been able to withstand the ill effects of the first contact with the white man. They are, in fact, so seriously overpopulated that there is not enough food in their strips of coral rock to sustain all their people. The result was the Phoenix Islands Settlement Scheme, a plan evolved in 1937 by a young Administrative Officer of the Gilbert and Ellice Service, H. E. Maude, and subsequently set in motion by himself and his assistant, the late G. B. Gallagher. Under the Scheme some 800 of the excess population of the Gilberts had already been settled on three of the Phoenix Islands—Hull, Sydney and Gardner—before the outbreak of war, and many hundreds more have applied to join them as soon as conditions make their transfer possible. It was primarily for this reason that the Phoenix Islands, only intermittently inhabited although always claimed by Great Britain, were formally incorporated in the Colony in 1937.

The Phoenix Islands, though they are only minute, low-lying dots in the middle of the Pacific, are by no means devoid of interest. Excluding Baker and Howland, which the United States annexed in 1935—it will be recollected that it was in trying to make Howland from New Guinea in one 'hop' that

the airwoman, Amelia Earhart, was lost in 1937—they consist of eight small coral atolls; their total area is only 16 square miles. The early explorers of the Pacific generally passed well to the south of the Group, which was consequently not discovered until, towards the close of the 18th century, whalers began to frequent the sperm-whale grounds of the Central Pacific. At the time of their discovery the islands were uninhabited, but from archaeological evidence it is clear that Sydney supported at one time a considerable population and that Hull and Gardner were also occupied before the coming of the white man. The whalers, who regarded these islands merely as hindrances to navigation, were followed by the guano seekers, mainly American; and various American guano companies worked the three islands of McKean, Phoenix and Enderbury from 1858 until 1871, when they closed down. There was now a lull of ten years in the history of the Group, at the end of which a British subject, John T. Arundel, leased the islands from the British Government, and not only proceeded to work the guano deposits on Sydney, Enderbury and Canton, but to plant coconut palms on every atoll on which they would grow. It was Mr Arundel's policy to provide the islands with other resources against the time when the guano deposits would be exhausted; and it is to him that the fine coconut plantations of the three atolls of the Settlement Scheme—Hull, Sydney and Gardner—are due.

Then came the era of aviation, which suddenly gave these obscure specks on the ocean an importance previously undreamed of. Their usefulness in connection with Trans-Pacific aviation began to be realized in 1934, when Kingsford Smith and P. G. Taylor relied on Hull for a bearing and an emergency landing-ground on their historic flight from Fiji to Hawaii. When in 1935 the United States annexed Howland and Baker (as well as Jarvis Island further to the east), Great Britain made no demur. But in 1938 the Americans became dissatisfied with their air-base of Pago-Pago in Samoa after the loss there of the *Samoa Clipper*, and decided to exercise their claim to Canton and Enderbury, where officers of the Gilbert and Ellice Islands Administration were already in charge. After considerable negotiation, the two Powers decided that there was room for both of them in the two atolls in question; and in 1939 Great Britain and the United States signed an Agreement setting up a joint control for fifty years over Canton and Enderbury, "without prejudice to their respective claims". The Pan-American Airways hotel



(Above: left) *Small Micronesian canoes, with outriggers pointing towards the photographer. The sail is of matting; (right) house built of native materials by the late G. B. Gallagher as the District Officer's Residence at Gardner in the Phoenix Islands. (Below) Ellice Islanders in dug-out canoes inside their lagoon. The background shows a main passage from the sea into the lagoon*

and airport at Canton were completed early in 1940.

I have visited six of the eight islands of the Group—in fact, I flew from Canton Island back to Suva on the very day before Pearl Harbour—and nowhere have I seen such quantities of sea-birds as on these former guano islands, especially on Enderbury and on Phoenix Island itself, which is practically never visited.

Christmas Island, the largest atoll in the Pacific, over 100 miles in circumference, was discovered by Captain James Cook, with H.M. ships *Resolution* and *Discovery*, on Christmas Eve, 1777. Cook anchored off the island from Christmas day until the following January 2 in order to observe an eclipse of the sun. In 1888 the island was annexed to Great Britain, and in 1919, as has been said, was included in the Gilbert and Ellice Islands Colony. It contains considerable coconut plantations, which, with those on Washington Island, were operated in the early part of this century by a remarkable character, the Rev. Emanuel Rougier, a Frenchman once in Orders of the Church of Rome. The importance of Fanning Island lies in its cable station, which is the connecting link of the Pacific cable between Canada and Fiji.

I have mentioned that only one of the Colony's many islands was not a coral atoll, namely Ocean Island, far away to the west. This islet of 1500 acres consists almost entirely of high-grade phosphate, which is worked by

the British Phosphate Commissioners (one appointed by each of the three Governments of the United Kingdom, Australia and New Zealand) under commission from the Crown.

The island's native name is Paanopa or Banaba, and its indigenous population number 750, of whom not more than 400 are adults. At the outbreak of the war I received a message from them through the Resident Commissioner stating that they were placing £10,000 (their currency is the Australian £) at the disposal of His Majesty's Government as a contribution to British war funds, and declaring that this donation, "which represents the unanimous will of the whole Banaban community, should be accepted as a token of their loyalty to His Majesty and the cause of the British Government, under whose protection they have lived since 1900".



Sir H. Luke

Sir H. Luke



Scottish Stone and Scottish Building

by GEORGE SCOTT-MONCRIEFF

Some months ago we published three articles by Mr H. J. Massingham in which he related English building to the materials and landscapes of different English regions. Now Mr Scott-Moncrieff—Editor of a standard work on Scottish Architecture and Secretary to the National Buildings Record, Scottish Council—briefly surveys Scotland's indigenous architecture and the materials most commonly used. On the left is a view of roofs, gables and 'lums' (chimneys) at Kellie Castle, Fife

SCOTLAND is a country of stone. Until modern times it could almost be said that brick was never used there, the exceptions are so insignificant. Of clay and wattle construction there is none. External timbering was used only to a small degree: for projecting galleries on a few of the old castles, and overhanging fronts in the restricted streets of Edinburgh (to be seen, in restoration, on the so-called John Knox's House). So that Scottish building implies the use of stone in one form or another.

But although Scotland possesses a considerable variety of stones, she is entirely without the lovely English limestone. The immediate results of this may be seen in the contrast between Scottish and English Gothic: it may even partially explain the predilection for Romanesque that continued in Scotland long after England was completely won to Gothic. Yet the Romanesque forms themselves seem more natural to Scotland, whose Gothic, deriving more from the French than the English, is customarily less rich in detail than the elaborate-traceried work in the south. The elaboration of Roslin Chapel is a freak rather

than typical of Scottish Gothic. In the Cathedrals at Glasgow and Aberdeen, as well as in the remaining west front at Elgin, a strong structural sense dominates, reaching its supreme achievement in the wonderful crypt at Glasgow where detail effaces itself in a profound preoccupation with space and mass.

In Scottish domestic architecture Gothic is insignificant. The form of the Scottish castle early asserts itself along strong but fluid lines to which occasional details, largely of defensive origin, come in exciting contrast to otherwise restrained lines.

From the original simple upright oblong, development took a practical course that nevertheless gives the sense of the flowering of a plant: the parapet was extended along corbel courses, sprouting open roundels that adapted themselves until we get the familiar and always pleasing pepper-pot turrets. Stair-wings incorporated towers, often corbelled out within the angle of a second block. Pure decoration of the exterior is limited to ornamental dormer-heads and panels with coats of arms—which sometimes, as at Castle



Robert M. Adam

Fraser in Aberdeenshire, incorporate the Royal Arms in a great flourish of high-relief carving.

The principal building material is sandstone, in a considerable variety of kinds and colours but chiefly of the Old Red Sandstone formation. Geologically, Scotland is one of the oldest parts of the world, her fabric has been subjected to every form of convulsion and erosion and much of her rock is conglomerate or agglomerate, while suitable building stones are generally to be found dispersed in comparatively small deposits. For the building of the great medieval churches it was frequently necessary to work a number of quarries. Some of the stone for the Cathedral of St Magnus in the Orkneys seems to have been brought from outlying islands. St Magnus is notable as being the only Cathedral in Britain in which a colour scheme of contrasting stones has been used: a yellow sandstone is incorporated as patterning against the rich red of the bulk of the Norman building.

The yellow sandstone used for decoration at Kirkwall is unfortunately one of those

Craigcattie Castle, Galloway, is representative of a number of small castles, little bigger than cottages, which are a particularly attractive feature of Scottish building of the 16th and 17th centuries

stones that has weathered very badly: in this it is unlike the lovely honey-coloured sandstone of Moray, which, while easily worked, on exposure quickly forms a protective silica skin. Some of it remains yellow: but that from the Newton quarry (at present lying needlessly idle: the stone of Moray should be much more widely used), which when quarried is a rather harsh colour, weathers to a beautiful silver-grey.

Further south again the sandstone is often white, and closely resembles the English limestone—as in the most exquisite small church remaining in Scotland, Dalmeny. The blue-white pillars in the earlier part of the Church of the Holy Rude, in Stirling, were quarried in the neighbouring famous quarry of Polmaise. The New Town of Edinburgh is built of a pale stone, first taken



G. Douglas Bolton



Robert M. Allen



G. Scott-Moncrieff



G. Scott-Moncrieff

(Opposite: top) Highland 'black house'. Drystone walls thatched with rushes; (bottom) Craigievar, in Aberdeenshire, a direct development of the same intrinsic forms seen at Craigcaffie Castle. Its confident elaboration conceals a simple L plan with a stair tower in the angle. Built of granite, subtly used: note how the rounded corners come out to the square beneath the corbelling of the turrets.

(Above: left) Typical of late 18th-century burgh architecture: houses in Banff. Built of rubble, their walls are harled and finished with a pale pink colour-wash. There has lately been much shameful destruction of similar examples of small domestic buildings. Recently restored, Lamb's House (right) in Leith was the home of a prosperous merchant who entertained Mary Queen of Scots there on her arrival from France. The harling is relieved by dressed stone mouldings

(Right) St Magnus Cathedral, Kirkwall: the only Cathedral in Britain in which a colour scheme of contrasting stones has been used



F. R. Newens



Robert M. Adam

(Above) Iona, raised to the status of a Cathedral only shortly before Scotland's destructive Reformation, is built of pink granite and is perfectly situated on the shores of the island overlooking the mountains of Mull. It was restored some years ago. (Opposite) Interior of Iona Cathedral. Rubble walls of pink granite from Ross of Mull: pillars and mouldings of grey freestone, probably from south coast of Mull. Built about 1500: showing long-persisting Scottish love for Romanesque

from the great quarry at Craigleith, and latterly from quarries as far apart as Binny, in West Lothian (near the shale deposits, yielding an oily stone, darkly marked), and Grange, on the Fife side of the Firth.

The New Red Sandstone formation is to be found in Dumfriesshire. It was, for some reason, rarely used as dressed stone until the 19th century. Whatever the reason, it was fortunate. For the stone is unpleasant, both in colour and in its rather cheesy constituency. It cuts easily and has been widely used in big cities, where its gloomy red, too facily contorted into the decorative mouldings of a decadent period, makes familiar eyesores.

Aberdeen is the stronghold of granite. Unfortunately much of the modern granite

building is entirely divorced from its material: granite should be used for what it is, a hard, heavy stone, neither freakishly moulded nor polished until it looks like a Juncheon galantine. The rugged Cathedral, and the rather lighter King's College Chapel, with its crown steeple, should have been accepted as examples. Iona Cathedral is likewise built of granite—a red granite quarried across the Sound on the Island of Mull—and has a proper simplicity. Even, with a mild rough face, granite is well suited to the Scottish classical style: as may be seen in some of the country mansions near the Galloway quarries. While cottages of rough granite, as those at the North Sea village of Boddam, have a fine rocky appearance suited to vigorous landscapes.



But a great deal of Scottish building is of rubble. Whinstone, volcanic ash, basaltic rock and sandstone are all in use wheresoever they are handy. Sometimes the rubble is coursed, or of a pleasing colour that deserves to be left bare, but normally it is best finished with a mild roughcast. This roughcast, known in Scotland as harling, has very considerable merits, giving great unity to a building: and in fact it is plain with many buildings, from large castles to small cottages, that harling is the only proper finish for them, aesthetically, to say nothing of its value as a protective covering for soft stones. There has of late been an unfortunate tendency to strip the harling from old buildings, and to back-point the rubble to give an 'olde crustedde stoneworke' effect. And the dismal grey cement harling applied to palpably brick council houses has further discredited a traditional Scottish finish that has given us such magnificent bields as the little tower of Coxton and the great towers of Craigievar and Glamis—where the moulded stonework stands out beautifully against the harl.

A word should be said of roofing materials. Here again a sense of solidity and weight comes proper to the Scottish tradition. Most substantial of all are the great stone slabs

used for roofing some of the earliest churches and such castles as Borthwick. Large slabs of laminiferous stone have been used until recent times for cottages and houses in Caithness and the Orkneys: and stone slats were once common, particularly in Angus and Banffshire. The native Scottish slate is always thick, unlike the Welsh slate. Much of it comes from Ballachulish, a dark slate; but there are outcrops in various places, particularly along the Great Fault, by Aberfoyle, where it is of various colours, grey, green and blue. In Fife and the Lothians, large pantiles, some of a most lovely glowing red, were chiefly used: as one trusts they may be used again in place of the hard-coloured Roman tiles imported from the Continent in recent years. In Fife and the Tay district, reed-thatching was once common.

The style of the roof tends to be distinctive from the English, better suited to a rougher climate. The gables are often finished with crowsteps, or a flat cope, enclosing the roof pitch: and eaves projecting over beams are quite foreign to Scotland.

It is difficult in a limited space to give any adequate definition of Scottish building. But there are certain dominant lines that relate it to the landscape as to the character and the



G. Scott-Moncrieff

(Left) Street in Culross—the best remaining example of a 17th-century Scottish burgh. It stands on the Fife shore of the Firth of Forth

(Opposite: left) Farm steading of the south-west of Scotland: slates run out to cover gables: whitewash is applied direct to whinstone rubble; (right) the crown steeple of the High Kirk of St Giles. Built about 1500: extremely characteristic of Scottish Gothic idiom

aesthetic of our people. It can best be appreciated by looking at choice examples. It is immanent in the crown steeple of St Giles: weird, unexpected, graceful. In the Palace at Stirling Castle: native ardour transformed but not curbed by Renaissance elegance. In the small mansion of Pilmuir—of the transitional castellated-domestic phase: white-harled simplicity made fascinating by refinements of structural detail. In innumerable farmhouses, sib to the soil, jutting out like homely knowes from the amazing landscape of Scotland. In the Fife fishing villages of unplanned felicity: sturdy homes of sea-gaun folk. In the true Presbyterian churches, of a modesty more charming than austere. In the New Town of Edinburgh and the churches, town halls and mansions of the Scottish classical revival. In the Merchants' steeple of Glasgow and such tolbooths as those of Kirkcudbright, Crail, Dumfries, Dunbar: gruff civic celebration. In short, it is as varied as the people, and unified as they are by their own particular blend of the canny and the expansive, the utilitarian and the ecstatic. It is of such varied stuff that tradition is made, so that there is no function or period that may not be served within it.



G. Scott-Moncrieff



Robert M. Adam

Rubber from the Desert

by HERBERT STANTON MARSHUTZ

Today, when that vital war material, rubber, is discussed by our American Allies, interest centres on synthetic substitutes or the product of the guayule shrub, a desert weed which grows wild in Mexico but is now intensively cultivated in the U.S.A. under Government direction. Mr Marshutz tells the story of its growth and development, particularly as he has seen it in the Salinas Valley of California

GUAYULE—if you imitate the Mexican's pronunciation, you will say 'wy-yu-lee'—is not new to the western world. It has long been known to natives of Mexico, Bolivia and even the Congo; but just as the Spanish first learned of the magical properties of rubber when the sailors of Columbus saw natives of Haiti playing with a bouncing ball, so did American travellers first find guayule similarly used by the Indian children of northern Mexico. This was nearly a hundred years ago. Then in 1852 it was 'discovered' again in Texas and scientifically catalogued by Dr J. M. Bigelow as *perthenium argentatum*.

Little attention was paid to this large, woody desert weed until an exhibit at the Philadelphia World's Fair in 1876 brought it into prominence. Production was begun in a small way, but not until 1904 did the business of making rubber from guayule really get under way.

The first factory was set up in Torreon, Mexico, by W. A. Lawrence, an American. It had a capacity of one million pounds of rubber a month. Improvements in methods and additional factories in Mexico increased the supply under the management of the Continental Mexican Rubber Company, with some thirty million dollars of American capital. Then, in 1912, under the direction of Dr W. B. McCallum, chief chemist of the company, the domestication of guayule was begun in various sections of the south-west United States. Too many revolutions had at that time made life in Mexico precarious. By 1924 it was decided by the then reorganized Intercontinental Rubber Company that the Salinas Valley on the west coast of California provided the most promising location for the rapid growth of rubber-bearing guayule. Here five million pounds of rubber were grown before the collapse of prices made further activity unprofitable.

California's famous climate, as exemplified by the Salinas Valley, proved a fortunate choice. Here the short rainy season (winter and early spring) is followed by a dry summer

and autumn. With the dominant winds off the Pacific Ocean, ten to fifteen miles distance, the annual twelve inches of seasonal rains are ideal to provide the moisture needed by guayule to carry on its cycle of manufacturing natural rubber for its own protection against drought.

For this is exactly how rubber in the desert grows. The guayule plant produces rubber to use in much the same manner as does man, for insulation. In desert country, which is its natural home, guayule has been forced in self-protection to evolve methods of insulating itself against loss of moisture during the long, hot, dry intervals which follow the short and widely-spaced rainy periods. This is effected by a deposit of rubber granules between the bark and the fibre of the plant and roots. Botanists discovered that the guayule plant stored water when rain came and used its rubber deposits to prevent evaporation during dry weather. The North American rubber plant is generally found on rough limestone where the soil is light and well drained. The country is usually semi-desert, and the guayule shrubs grow in contact with such typical desert plants as candle-brush, greasewood, sagebrush, cacti. A mild climate is needed, although, when dormant, plants have survived a drop in temperature to 5° Fahrenheit. Since guayule is thus more or less drought-resistant, it makes an amazing, almost immediate recovery when the dry spell is broken. The mature plant is usually four or five feet wide, up to three feet in height, with crooked brittle branches and many inconspicuous yellow flowers on short slender stems.

Year after year the guayule continues to deposit rubber during its life-span of some thirty years. Under cultivation, however, the peak of production is reached during early maturity. As the shrub is destroyed in recovering the rubber, the most economical cutting period has generally been at four or five years. In this time, under ideal conditions, the production of rubber per acre has

been known to reach between 1200 and 1800 lb., with a rubber content totalling 18 to 20 per cent of the dry weight of any one bush. At Salinas, scientific management and ideal care promise by 1946 a yield of 2000 lb. per acre.

The ultimate product is the same as that of the better known rubber (*Hevea*) tree of the East Indies and the Amazon. Under the microscope, and to the sense of feeling and smell, the two rubbers are the same; but there is one difference. While the tree-rubber contains only 4 per cent of resin, its desert cousin averages 16 per cent. This average depends upon the methods of production. In the growing plant the resin is a separate constituent that becomes mixed with the rubber in the milling process. For some usages the resin is permitted to remain; for others it is removed and used for other manufactured products, notably plastics. New, inexpensive processes separate the resins for one-eighth of the former costs and make profitable what at one time was regarded as a nuisance by-product.

Methods of production are, of course, widely different. If you visited northern Mexico, far out in the back-country you would find caravans of heavily-laden donkeys

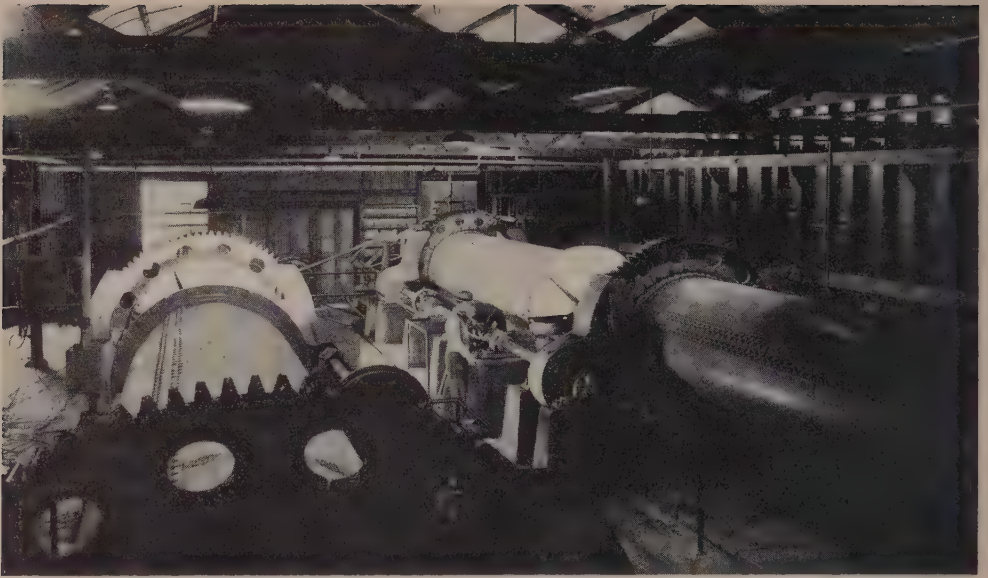


Stanford, London

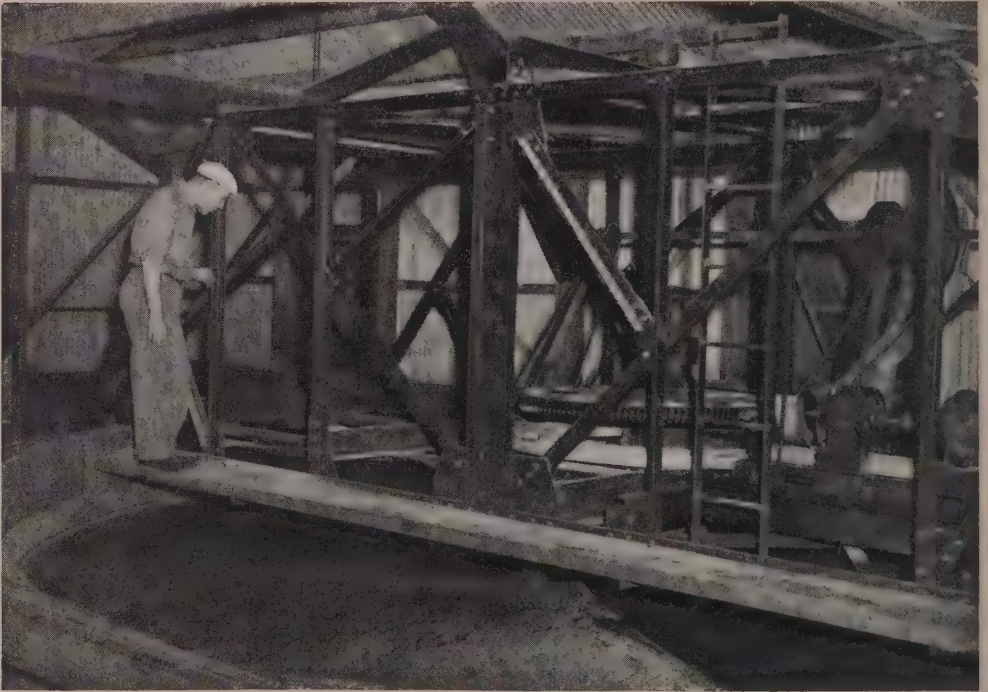
following beaten trails. You would see that each animal carried neatly stacked bundles of guayule shrub—some 200 lb. to a pack-saddle. Behind each string of donkeys a barefoot Mexican peon urges his beasts forward. In the Mexican State of Durango, the peons yank up the mature plants by the roots, or chop down the seven-year-old ones with sharp

Mature, 5-year-old guayule plant photographed with a yardstick. It grows up to 3 feet high, with crooked, brittle branches and inconspicuous yellow flowers on slender stems





(Above) Pebble mills, through which the dried, shredded guayule plant is passed to separate the rubber particles from the fibres. (Below) The settling tank, in which the rubber floats to the surface leaving the wood-like fibre to sink



machetes. Cut to proper length, piled in neat stacks and bound with twine from the yucca or agave fibre, the desert rubber begins its journey to the factory. The Mexican company, Hulera De Parras, are large producers of guayule rubber and important shippers throughout the North American continent.

From the crude hand-mills used by the Indians of Mexico a century ago, it is a long span to the modern milling machinery in operation today. Under the United States Government supervision many advances have been made. When the shrub is brought to a mill it is dried and put through a series of rolls and mangles which reduce it to a finely shredded mass. This basic material, with a carefully controlled quantity of water, is fed through a series of 'pebble mills'—long tubes lined with extremely hard silicon brick and partly filled with a special kind of smooth pebbles. While the tubes rotate, the grinding action of the pebbles and the brick separate the rubber particles from the plant fibres. A settling tank does the rest. The water-soaked, wood-like material sinks and the rubber floats to the surface in little lumps called 'worms'. When cleaned the dried worms are pressed into 100-lb. slabs for shipment to various rubber factories.

Less than a quarter of a century ago guayule was a mystery to industrial America. Henry Ford, the motor magnate, in a 'daring experiment' ordered a complete set of tyres made from guayule for the 100 per cent all-American car given to Thomas Edison. Today guayule represents the principal source of crude rubber on the North American continent. Experimental tyres of guayule have given 90 per cent of the mileage of Hevea rubber.

Although the extreme durability of artificial, or synthetic, rubber has been proved, the greater elasticity of guayule makes it an ideal ingredient to mix not only for tyres but for many other commercial products. Even without the removal of the resin, the addition of guayule to synthetic and other natural rubbers brings an improvement in quality not to be disregarded by industry.

A continued, steady demand for guayule, and its proven worth to industry, ensures a permanent place for the cultivation of this desert bush which has suddenly come into its own in the United States. Knowing these facts, and recognizing the importance of an adequate source of both types of rubber to American economy, the Government last year took over the plant and other assets of the

Intercontinental Rubber Company of Salinas, California. Congress authorized a 75,000-acre planting programme; thus, in a few months, the vast expenditure of time and money by Dr McCallum and the parent company was justified. For under his able direction an elaborate and painstaking programme of experiment had been carried out, resulting in a great increase in the productive qualities of the domesticated guayule shrub over its wild ancestor. After the second season successful harvesting took place. Original plans called for a four or five year programme: four years of growth at Salinas were found comparable to twenty years in the desert.

Behind this achievement of modern methods applied to nature's own 'rubber factory' is a long fight in the field. Guayule seed does not germinate readily if planted in its natural state; long years of experimentation by Dr McCallum and his staff were required before a process of pre-planting treatment was evolved to make possible the successful germination of a satisfactory portion of seed. Guayule reproduces only by means of seed; therefore seed-collecting became one of the most important phases in the programme. Mechanical means—vacuum pickers—were ultimately designed and employed to suck the seeds from growing plants into containers. For seedlings in the nursery beds, other machinery was designed to salvage the seed without damaging the plants. In the United States Government fields last year close on 175,000 lb. clean weight of seeds was harvested.

Here is the seed formula perfected by the Intercontinental Rubber Company:

After collection, the seed is run through a fanning mill to remove trash and chaff and is then placed in a tank of water where it is allowed to soak for about twenty-two hours, being meanwhile mechanically stirred. At the end of this period the water is drawn off and the bath refilled with a $\frac{1}{2}$ to $1\frac{1}{2}$ per cent solution of calcium hypochlorite or sodium hypochlorite. The seed is soaked in this solution for from two to four hours, when it is again washed to remove the excess chemical. It is then put through a centrifuge to remove surplus water, and finally dried in a mechanical drier. When the moisture content has been reduced to a given point, the seed is packed in air-tight drums for storage. It may also be stored as it comes from the field but must in any event be treated as above described before planting, unless it has been in storage for several years, when the treatment may be diminished or even



Sowing guayule seed in the Salinas Valley. Chemically treated seed is covered with a thin layer of sand to keep it from blowing away and irrigated at once to hasten germination

dispensed with. Seed may be stored for several years without losing its viability, thus permitting a supply to be kept on hand against lean seed-production years. When it is desired for any reason to have the seed come up quickly after sowing, it is partly germinated in trays placed in a chamber where temperature and humidity are kept under careful control. Pre-germinated seed must be sown when it is ready, however, regardless of soil or weather conditions, which militates against the use of the practice unless there is some special reason for it.

Owing to the scope and importance of the guayule programme in the United States, dollars were not counted in the designing of machinery and planning of methods to make possible large scale operations.

Beds for the seeds are prepared mechanically and the actual seeding is done by machine—a process which involves covering with sand and watering. Weeding was a tedious task by hand labour; during one season at Salinas some 2000 workers, largely

women and girls, were hired to clean up the weeds. Now safe oil-sprays have been discovered.

The process of transplanting, as important as seeding itself, is accomplished by means of tractor-drawn planting machines which handle four rows simultaneously. Ten thousand young plants per hour is the normal pace of the machine, or a field of ten acres in a ten-hour day. This is a job only for the most adept of workers, for each must handle something like one plant each second while the machine moves along the rows. Harvesting, too, is done by a machine which digs out the plants, including the principal roots. After the three-day curing period they are either cut into chips or baled for factory shipment.

During the summer of 1942 350 million seedlings were grown at Salinas. In addition, guayule production was undertaken in southern California near Indio and also near



Hand weeding at Salinas in which over two thousand workers, most of them women and girls, were employed—a tedious task now superseded by the use of oil-sprays

Oceanside; other experimental plantings on a large scale were made at Wasco near Bakersfield in the San Joaquin Valley, in the lower Rio Grande Valley of Texas, the Mesilla Valley of New Mexico, and the Salt River Valley of Arizona. The Salinas project alone should provide some 1,200,000 lb. of guayule, which will create 600 tons of rubber. Government estimates for the 1944-5 yield set up 21,000 tons of guayule rubber as a goal to be achieved, with further expansion authorized if conditions call for it. As time goes on, the valuable desert shrub may be adapted to other areas now believed practical.

In some sections of California the need for increased vegetable lands recently brought a demand for the relinquishment by the Government of certain productive acreages set aside for guayule. As an improved strain of guayule—one that will not require the most ideal conditions—is evolved, the use of marginal and sub-marginal lands will release

much of the higher-grade soils formerly used for cotton, garden crops, etc.

The future of guayule depends, of course, upon many factors and will be influenced not only by the success of synthetics and the increasing supply of tree-rubber flowing in Brazil, but by the possibility that other natural producers of rubber will provide competition. More than 2000 varieties of plants were tested last year in the United States. Probably the most promising was the Russian dandelion (*kok-saghyz*). Some 18,000 lb. were harvested from experimental plants and others were allowed to remain in the ground for seed. This source of rubber will grow in all the northern belt States, just south of the Canadian border, from Oregon to Maine, where fertile soils of the organic type, mulches and peats, are found. American yield, however, succeeded in attaining a level only about half that of the Russian average of 4000 lb. of root production.





(Opposite: top) Old-fashioned 6-row machine planting guayule near Chualar and (bottom) modern 6-row cultivator at Salinas. (Right) Irrigating a guayule field in the Salinas Valley. The crop is grown on irrigated or dry land, but, as the lower photograph shows, ample water means better growth

(Right) *Ploughing up a row of mature guayule shrubs with an experimental single standard plough*

(Below) *A buck rake propelled by a caterpillar tractor takes the shrub to the baler. When baled it is ready for transport to the factory*



If there is a competitive race between kok-saghyz and guayule, the latter will be under one severe handicap: high cost of processing. The dandelion is a soft weed, but guayule is tough. Its American discoverer admired the skill of the Mexican and Indian children in separating the rubber particles from the fibres of the plant. For lack of other means, they used their teeth, and only after four hours of chewing was any sort of result possible. This is characteristic of the whole story of guayule. Each step of progress came after years of costly, wearisome trial and error experiment;

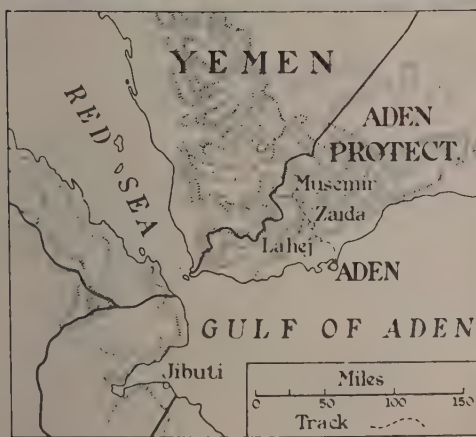
and the fight has not yet been entirely won.

Synthetic rubber as I write commands in the United States a price of from thirty-five to forty-five cents per pound. Far East rubber is sold at forty cents per pound, or at a controlled figure of twenty-two and a half cents for tyres or other civilian use. Guayule, on the other hand, is offered at eighteen cents. Only by following modern mechanical methods could such a price be possible, for in the United States the cost of farm and factory labour is higher than anywhere in the world.

All photographs from the author



On Patrol in Southern Arabia



A column of R.A.F. armoured cars on reconnaissance patrol making its way into the mountains of Southern Arabia. Much of the route is along narrow boulder-strewn mountain tracks, where the cars rock and sway at hairpin bends with a sheer drop on one side and crumbling rock on the other. The top photograph shows the cars halted on the track halfway between Lahej and their destination, Musenir. Below, they are passing through the village of Zaida





Photographs from the Ministry of Information

(Opposite, left) One of the cars fording a stream; (right) after a stiff climb the column takes a breather; (below) parking their car, the crew gets to work to widen the track. (Top, right) A temporarily disabled car blocks the road and the O.C. directs traffic past it. (Below) The journey ends on the plateau above Musemir. Tents are pitched, fires lit and the crews get their first meal since the journey began twelve hours before. Contact with base is established from the wireless tender (see the top picture on the left) which is equipped with a powerful transmitter and collapsible aerial. The armoured cars are drawn up to form a square round the tents. Next day the Sultan of Musemir visits the camp and afterwards takes the Officer Commanding the Armoured Car Section on a tour of the district. The following day the convoy starts on its return journey





The Structure of the Past

III. Mesopotamia

by Professor V. GORDON CHILDE, D.Litt., D.Sc.

The memory of the ancient culture of the land between the rivers Tigris and Euphrates, in what is now Iraq, has never died out in the West, for it has lasted as long as the Biblical and Classical texts which are still part of modern education. In this third article of our series, Professor Gordon Childe describes how the excavations of the last twenty-five years have given place and body to what was before little more than historical legend, and have proved that the deepest roots of our civilization, passing through Greece and Rome, lie in cities such as Sumer, Ur and Babylon

THANKS to Hebrew, Greek and Roman traditions, Europeans have always been aware that a high civilization once flourished in Mesopotamia. Biblical and Classical texts prove that the roots of the cultural tradition we have inherited from the Jews and the Greeks struck deep into the alluvial soil of the Tigris-Euphrates valley. The excavation of the Assyrian kings' palaces at Nineveh and Khorsabad about a century ago, and the discovery and subsequent decipherment of clay tablets stored in the royal libraries, enormously enhanced our appreciation of our cultural debt to the ancient Babylonians. And further excavation and translation revealed, behind the Semitic Babylonians, a still earlier population, the Sumerian, with traditions reaching back into a mythical epoch "before the Deluge".

In the last twenty-five years mathematicians

and astronomers, from a re-examination of the old written texts, have disclosed the great achievements of the ancient scribes, proving that still more than had been anticipated, even of modern science, is based upon Babylonian and Sumerian discoveries. Archaeologists have completed the picture of the oldest civilization known in history by uncovering the ruins of Sumerian cities and cemeteries, of which the celebrated Royal Tombs of Ur are the most dramatic example. Digging deeper into the mounds, they have penetrated behind written history and reached the prehistoric beginnings of civilized life in this valley.

For the historical cities were built upon the sites of older towns and villages repeatedly reconstructed. As the streets became filled with refuse and the houses of mud-brick decayed, building levels had to be gradually

raised. Eventually historical temples stand perched upon a mound or *tell* of rubbish as much as 70 ft. high. In the successive layers of debris we can almost watch the village turning into a city, the chapel into a cathedral, and follow step by step the invention of writing and arithmetic. Since the Sumerians chose clay as their 'paper', built in clay and lived on the same site for generations, they have left behind them a unique archaeological record. Nowhere else, at the moment, can the birth of a civilization be traced so clearly.

The drama may be divided into four acts, or prehistoric phases, to which specialists have assigned conventional names: Tell Halaf, El 'Ubaid, Uruk and Jemdet Nasr. The scene—Mesopotamia, or the Land between the rivers Euphrates and Tigris (Diyala)—covers three main zones the importance of which varies from act to act. The first zone is Lower Mesopotamia, new land built up by the silt of the twin rivers, which is gradually filling up the Persian Gulf (in the last 2500 years the land has encroached upon the sea by some 75 miles). The most recently created delta territory formed the ancient Sumer (Biblical Shinar). It must have been a land of vast swamps and formidable reed-breaks through which the rivers meandered along shifting channels to the Gulf. But, set between desert and arid steppe, it offered from the first solid inducements to human settlement. The rivers teemed with fish; wild fowl nested among the reeds; boar and other game sheltered in the swamps. The date palm grew naturally and offered a certain harvest of fruit. The proximity of the sea tempered the severity of continental winters. Finally the alluvial soil is extremely fertile once it is provided with water or drained of excess. But the water must be brought to the land; for the rainfall is low and uncertain. Moreover, like any deltaic land, Sumer is deficient in essential raw materials: building timber, stone for carving, even any good material for cutting and chopping tools, and metal ores. Neither palaeolithic savages nor the rudest of peasant cultivators could profitably exploit such a territory. Relatively advanced equipment, material and spiritual, was needed before it could be made into a Garden of Eden; only societies organized to cooperate, and disposing of a substantial labour force, could defend settlements against flood, drain the swamps, and canalize the water from the rivers to irrigate intervening strips of desert. Hence during the first act of our drama Sumer seems deserted.

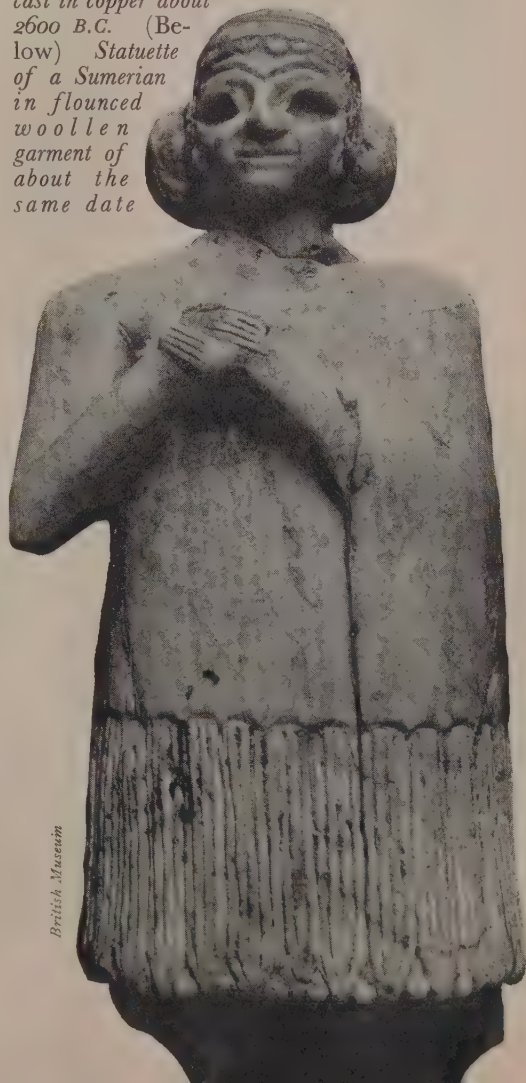
Going upstream we reach the second zone, the older delta tract, ancient Akkad. Here



Stanford, London

(Opposite) *The lion-headed eagle, Imgig, from the frieze of a Sumerian temple near Ur cast in copper about*

2600 B.C. (Below) Statuette of a Sumerian in flounced woollen garment of about the same date



British Museum

the climate is more continental; in Baghdad night frosts are so heavy that gutters on the shady side of the street remain frozen over all day in midwinter. The river channels are cut deeper into the alluvium so that irrigation is rather less easy. At present it looks as if permanent settlements of farmers were established in Akkad even later than in Sumer.

The third zone is still further upstream, where the river channels diverge, and traverse a piedmont zone of steppe, now embraced by the Mosul vilayet and northern Syria, the ancient Assyria and Subartu. It is bounteously watered by tributaries flowing in from the Iranian and Turkish highlands—the two Zabs, the Khabur and the Balikh. It enjoys, in addition, a modest winter rainfall sufficiently reliable to guarantee good spring pastures and even a crop of corn. Though the date palm is no longer at home, vines and fruit trees take its place. The adjacent mountains offer abundant timber for carpentry and good stone for building and for cutting tools. The prehistory of Mesopotamia seems—today—to begin in Assyria and Syria.

Proofs of occupation by hunters and collectors in the Old Stone Age are still missing. Even the earliest stages of the ensuing New Stone Age of grain-growing and stockbreeding are still obscure. The record becomes clear

only with regular villages of quite advanced farmers, cultivating wheat and breeding cattle. It is premature to attach to them any ethnic label such as Semite, Sumerian or Subaraean. They have been christened Halafians, after one of their villages, Tell Halaf on the Khabur, that gives its name also to the first clear phase of prehistory. Halafian settlements have been found right across the piedmont zone from Nineveh and adjacent sites east of the Tigris to Carchemish, on the Euphrates; to the Mediterranean coast at Ugarit, near Alexandretta, and to Lake Van in the Armenian highlands; but have not yet been certainly identified in Akkad or in Sumer.

The villages, with their well-cobbled streets dominated by a conspicuous shrine, reveal well-organized and devout farming communities. Most tools were made from local materials, stone, bone and wood, but obsidian was imported from Armenia and copper was almost certainly known.

In the second phase, beginning not later than 4000 B.C., a new culture, defined by architecture, ceramic styles and burial rites, and named after El 'Ubaid near Ur, is found in the tells above Halafian ruins. It may belong to a new people. Yet at Gawra in Assyria, the local shrine was rebuilt on the

(Left) Sumerian artisans 5000 years ago worked squatting on the ground like this tinsmith in Baghdad today. (Right) The prosperity of Lower Mesopotamia (Sumer and Akkad) has always depended on the waters of the Tigris—

Squadron Leader Cosens

H. J. Shepstone



same spot as its Halafian precursors, though on a grander scale, so that there was evidently no interruption at least in the religious tradition.

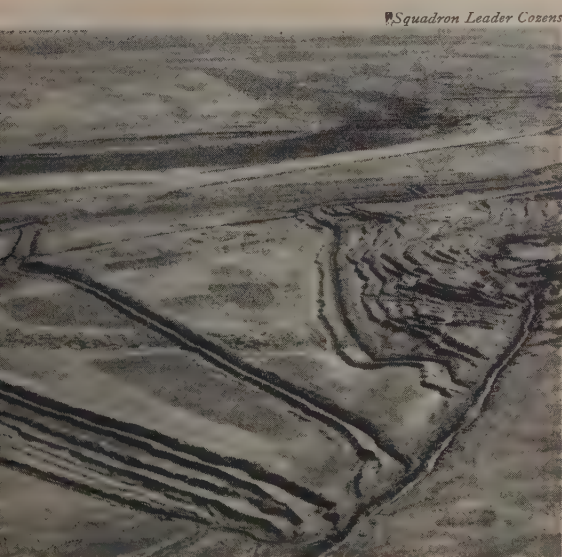
But the El 'Ubaid culture is found not only in Assyria and Syria but also in Sumer, and only very recently in Akkad. The El 'Ubaid villages are the cells from which the historical Sumerian cities, Erech, Eridu, Lagash and Ur, were to spring. The villagers presumably initiated drainage of the swamps and irrigation of the desert. They must have begun to organize the commerce necessary to supply cultivators of the delta with raw material for tools. Copper was certainly known by now; we know that it, or its ores, and obsidian were imported into Sumer to make the blades of axes, knives and sickles, and in the long run copper was cheaper because more durable. Hence the El 'Ubaid peasantry must have produced a surplus above the requirements of domestic consumption to pay for imports and support smiths and other specialists who would not normally grow their own food. Incidentally at Ur, during the El 'Ubaid period, the accumulation of debris was interrupted by a deep bed of water-laid clay covering part of the site. Sir Leonard Woolley has suggested that it was laid down by 'The Flood', of Sumerian and

Biblical tradition. But at Shuruppak and Kish other 'flood-deposits' have been found in later periods. Either of these has as good a claim to represent Noah's Flood as the El 'Ubaid one at Ur. In any case it shows how the river could and did change its course.

In the third prehistoric phase the development of culture on the piedmont-steppe zone diverged from that in the Delta, and Sumer begins definitely to take the lead. There a new culture, named after Uruk (the Sumerian form of the Biblical Erech), emerges and may again denote the infiltration of new people or, more vaguely, foreign 'influence'. Now in addition to metals, wheeled vehicles and the potter's wheel came into general use throughout Mesopotamia—all signs of industrial specialization. The wheeled cart was an obvious aid to commerce too. But the fullest exploitation of these great inventions is seen in Sumer, perhaps because there the requisite reserves of foodstuffs (in other words, capital) could most easily be produced and the shortage of raw materials made trade essential.

Well before 3000 B.C., when some seventy feet of debris from the decay and reconstruction of successive settlements had accumulated above virgin soil at Erech, the tell was crowned with a group of monumental temples, glorified versions of rustic sanctuaries

—and Euphrates, conveyed by a network of canals and channels (left) to irrigate the rainless desert. But in Upper Mesopotamia (Assyria) settlements can climb onto the hills (right) as rains fall in the winter



Squadron Leader Cozens

Squadron Leader Cozens





British Museum

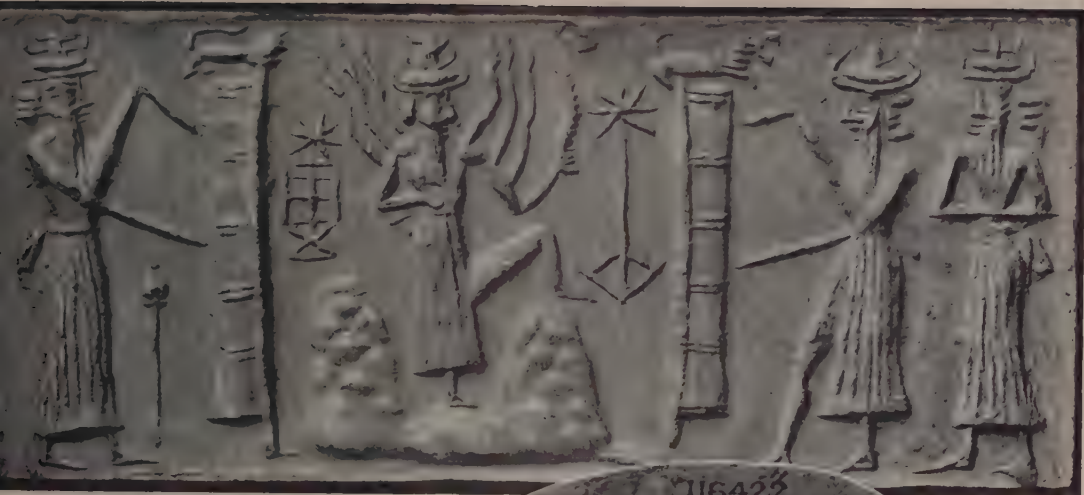
such as we have already met in Assyria, where they continued to be built in Uruk times. Such vast edifices symbolize the concentration of surplus wealth, produced by pious farmers and fishermen, in the hands of deities and their self-appointed ministers, and form the nucleus round which the city grew, with its population of priests, clerks, merchants and artisans as well as primary producers. The whole was already enclosed by a defensive wall whose shelter gave the citizens an artificial, distinctively human environment.

Presumably the city's lands were regarded as the deities' estates and their cultivators owed the god a tithe, or rent in grain, or services. Accumulated in temple granaries, small contributions of individual cultivators mounted up to a relatively large surplus for the support of artisans and the import of raw materials. The customary services of the god's tenants would ensure the maintenance of canals and dykes. So in a sense each temple would form a sort of enlarged household in which the several jobs performed collectively by the members of every family in a neolithic village—tilling fields and gardens, brewing, making pots, spinning and so on—were assigned to one or more specialists who did nothing else.

In the temples of this phase appear the first written documents: clay tablets engraved with highly conventionalized pictorial signs and numerals. Though the signs cannot be read, it is certain that the documents are accounts. For the administration of such a complex economic organization as the Uruk

temple by a corporation of priests, a system of recording, intelligible to all the officials concerned, was patently necessary. The account tablets show how a system of writing was invented in response to this need. It is almost certain that the language thus written was Sumerian. So we may term at least the ruling class in Lower Mesopotamia during phase III Sumerians with more confidence than we can name their precursors of phase II. The same script, and so presumably the same language, was current throughout Sumer. That need not mean that Sumer was a political unit. On the contrary, battle scenes were popular in contemporary art and may well be drawn from the same sort of internecine wars as the earliest decipherable records describe.

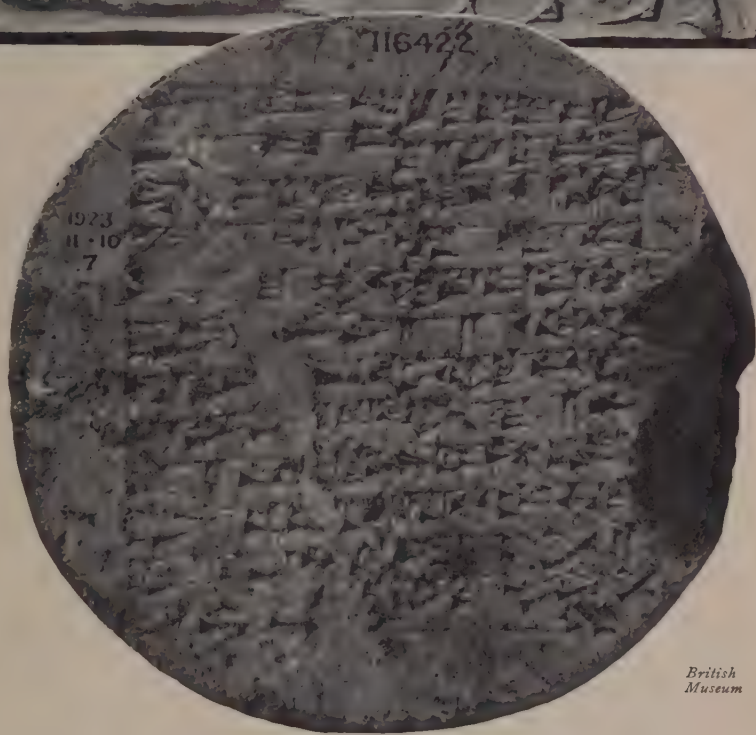
In the last prehistoric phase the social, economic and religious system described must, judging from its material expression, have spread to Akkad, too, as well as to Eshnunna and Akshak beyond the Diyala, and to Mari on the Euphrates, now just across the Syrian frontier; but only a very provincial variation can be recognized upon the steppes further north. Commerce was regularized so that considerable quantities of raw materials—copper, lead, silver, timber and stone—and such luxuries as lapis lazuli from Afghanistan, reached the cities of Sumer and Akkad. In return Sumerian manufactures were traded over a wide area. As a result, seals, of a kind fashionable at that time in Sumer, have turned up in central Turkey and the isles of Greece. On the Nile itself so many archi-



(Opposite) Cylinder seal showing, in the centre, the sun-god, holding in his hand the saw-knife with which he 'cuts' justice, rising between the two mountains of the horizon. He is assisted by the long-haired goddess on his left, Ishtar (Venus), the goddess of the morning and the evening star, who wears a royal dress and the horned mitre worn by divinities. On the right the water-god, marked by the two rivers that flow from him, with fish, lets the bird that is the winged disk fly to

assist the dawn. The two-faced god is the son of the magical water-god, and knows the magical formulae.

(Above) Another cylinder seal with the sun-god Shamash stepping over the mountains. Minor deities are opening the double doors which lead to and from his course across the sky. (Below) The death of Tammuz was lamented annually in Babylonia as in Syria. This is a clay cone dedicating a building to this ancient god, inscribed by order of Rim-Sin, king of Larsa, in the time of Hammurabi. Such documents are frequently all that is left of a building



British
Museum



British Museum

Bull's head of massive gold from the 'gold' lyre found at Ur. One horn, as can be seen, was bent; but the head was still attached to the instrument

tectural devices and artistic themes current in Mesopotamia were reproduced just before and after the reign of the first Pharaoh (about 3100-3000 B.C.) that many authorities feel bound to postulate contact between the two nascent civilizations. For instance, a tiny Egyptian ivory is carved with figures in quite un-Egyptian dress and attitudes. The same costume and the same style of composition is reproduced on a large stone *stèle* found in a Jemdet Nasr layer at Erech in Sumer. Some experts say that the Egyptian ivory is a miniature copy of Sumerian work; others contend that both carvings depict for the first

time Semites who would be intruders in both valleys from some intervening region. In either case the theory of cross-fertilization between Egypt and Mesopotamia at the dawn of history is plausible.

For, now, prehistory ends in Sumer and Akkad; decipherable inscriptions in a simplified script supplement the archaeological record. They reveal, beside the city god, the human figure of the city governor, who is almost a king, sometimes high priest of the chief god, but also leader in war. Similarly the archaeological record discloses, besides temples, palaces suitable for a secular ruler, and, perhaps in addition to the simple graves of private citizens, royal tombs of elaborate structure and rich furniture. (Some high authorities, like Professor Sidney Smith—who contributed the first article in this series—however, contend that the so-called royal tombs contain not kings but persons and things dedicated to the god in some ritual.)

This oldest literate Sumerian civilization, conveniently termed Early Dynastic by Professor Frankfort, prevails throughout Sumer and Akkad, Syria and Assyria remaining a semi-barbarous hinterland of illiteracy. All the cities enjoyed a fairly uniform culture. All used the same signs to write, in Sumerian language, accounts and short liturgical and historical texts. All depended upon trade, supplemented perhaps by occasional warlike expeditions, to procure similar imported necessities and luxuries. Articles manufactured in contemporary cities of the Indus valley now reached Ur, Kish and Eshnunna. In the Bronze Age Orient, commerce carried ideas as well as commodities; in fact, judging by a scene carved on a Sumerian vase, an Indian cult was being celebrated at Eshnunna just as Anglican services are celebrated in the Embassy chapel at Istanbul today. And all cities were dependent on the waters of the same rivers for cultivation as well as transport.

Yet the cities were politically independent. Moreover, some Early Dynastic kings, of Kish and Mari for example, bear Semitic, not Sumerian, names. Almost inevitably disputes between the sovereign cities arose over border territories or water rights. One of the oldest decipherable documents records a treaty that ended such a war between Lagash and Umma; the parties to the treaty are not kings or cities but the city gods. A later king of Lagash had to dig an enormous canal to circumvent Umma's interference with the Tigris waters. Literary and archaeological records alike suggest that much accumulated wealth was squandered in futile civil wars.

Written documents also give hints of social

Calf's head in copper from the wooden lyre found at Ur. It has inlaid eyes and a triangle of lapis lazuli set into its forehead

strife within the cities. A famous tablet dug up at Lagash describes how rich priests were oppressing the gods' humbler tenants; the city governor intervenes to correct these abuses. In fact the city governor—who embodied the State—repeatedly assumes the rôle of protector of the poor and weak. The city governors also boast of the construction of temples and granaries and the digging of canals and reservoirs. But their main secular function would be that of leader in war—and not only in defensive wars against poorer and less advanced mountain and desert tribes who continually threatened the fertile irrigated valley, but also against other civilized city-states within it. Each city governor seems to have been trying to extend his sovereignty over the remaining cities and subconsciously striving to convert an existing cultural and economic unit into political unity too.

At last, about 2350 B.C., Sargon, the Semitic ruler of the new city of Agade—in Semitic Akkad from which the whole upper delta tract gets its name—succeeded. His house, despite frequent revolts, ruled the cities of Sumer and Akkad as a single kingdom for nearly a century. It did more; inscriptions speak of conquests from the Lower Sea (Persian Gulf) to the Upper Sea (Mediterranean?), to the Cedar Forest (Lebanon?) and the Silver Mountain (Taurus?). The archaeological record gives confirmation of these claims. One of Sargon's successors founded a temple to Ishtar at Nineveh, another built a palace at Tell Brak on the Khabur. So Sargon became the first exponent of Oriental imperialism, the first recorded founder of a territorial empire. No wonder his exploits were later celebrated in epics, one version of which turned up in the ruins of the Egyptian capital a thousand years later.

Significantly enough the regions annexed were sources of supply for the raw materials lacking on the alluvial plain necessary to keep urban industries going. The explicit references to Cedar Forest and Silver Mountain suggest that the conquerors were not blind to these advantages; they might obtain the indispensable imports as booty or tribute. To this extent Sargon's empire looks like an attempt to create a self-sufficing unit embracing both the agricultural riverine plain and the hill countries that could provide the essen-



British Museum

tial ores, stone and timber.

This first experiment in economic imperialism did not last long. The conquered tribes revolted. The victims of aggression learnt to imitate the military organization and techniques of the conquerors, and thus equipped were themselves ready to attack the plains. They did not relapse into barbarism. For instance, the urban civilization and economy symbolized by the great Ishtar temple at Nineveh continued; Nineveh was now an autonomous city not a barbarian village.

In Lower Mesopotamia, meanwhile, the several cities recovered their autonomy, and an incursion of barbarians from Gutium—an unidentified region on the fringe—put an end to Sargon's empire. The land relapsed into an anarchy of contending city-states for about a century. Eventually the kings of Ur, this time Sumerian, succeeded in establishing dominion over Sumer and Akkad. Like Sargon they, too, extended their domains beyond the plain, held sway over Elam, east of the Persian Gulf, and built a temple at Qatna, beyond the Euphrates, between Homs and Damascus. The kings of Ur seem to have made some attempt to create an administrative machine and a unified system of laws for their Mesopotamian domains. But their empire fell to pieces as Sargon's had



H. J. Shepstone

(Above) *Babylon: the north-west corner of the Southern Citadel.* (Opposite, top) *Fragment of a temple tower at Birs Nimrud, the ancient Borsippa. Travellers in the past have thought, erroneously, that this was the Tower of Babel.* (Bottom) *This view shows a part of the route which was once the Sacred Way, used for the procession of the gods at the New Year's Festival in Babylon. Originally, the Way was completely paved with stone blocks, that have disappeared during sieges and owing to theft*

done just before 2000 B.C. The provinces revolted; city-states reasserted their autonomy; fresh Semitic tribes, the Amorites from the west, filtered into the Tigris-Euphrates valley.

After another couple of centuries of civil war, in about 1800 B.C., Hammurabi, the Amorite king of the new city of Babylon, forcibly united the cities of Sumer and Akkad into one state that may henceforth be called Babylonia. The cities lost their autonomy; their governors were no longer either sovereigns or even vassals, but nominees of the king of Babylon. A single calendar

replaced the local ones hitherto observed in each city. A unified code of laws was promulgated for the whole kingdom and royal judges were appointed to administer it. Thus Lower Mesopotamia eventually obtained a political form appropriate to its geographical unity. On the other hand the Amorite dynasty indulged in no imperialist ventures beyond Babylonia. Assyria and Elam had been independent kingdoms since the collapse of the empire of Ur. Babylonia therefore remained dependent on international trade for raw materials.





(Above) Reverse of a 'standard' of mosaic (shell, carnelian and bitumen mounted on wood) from a 'Royal Tomb' at Ur about 2600 B.C. The obverse depicts the Sumerian army in battle. On this side we see the feast of the victorious king or the city's god, the spoils of war and the thank-offering of the citizens. (Right) Side panel of a chariot from a 'Royal Tomb' at Ur, decorated with three lions' heads in gold with lapis and shell manes. The small heads above, also in gold, are of lions and bulls. The inlay bordering the panel is of mosaic. (Opposite)

Hammurabi, King of Babylon about 1800 B.C., receiving from the sun-god Shamash the code, inscribed below the scene, the world's oldest corpus of law







H. J. Shepstone

(Top) The transformation of the prehistoric village into a city is symbolized by the erection of a monumental temple to the city's god. Attached to each was an artificial mountain, or ziggurat crowned by a high temple to which the deity descended. The oldest known is that at Ereh built about 3300 B.C. and crowned with a small whitewashed temple reached by a long stair from a court and preserved by later reconstructions. The tradition lasted, and the much higher ziggurat built by Nebuchadnezzar for the god Marduk in Babylon suggested to the Hebrew exiles the legend of the Tower of Babel. (See illustration on page 277.) (Bottom) An excavated site at Ur. (Opposite) Sumerian amulet from El 'Ubaid

The new unit proved viable, though dynasties and ruling classes changed. Raids by Elamites from the east and by Hittites from Asia Minor contributed to the overthrow of the Amorite dynasty. Kassites from the eastern mountains and later Chaldeans from the north succeeded them on the throne of Babylon. For a time Babylonia was a province in the Assyrian Empire. Finally it was incorporated in the Persian Empire and never again recovered its independence. But the great temples in Babylon and other cities survived all these changes. They were indeed reconstructed and embellished even under the Persians and by Alexander and his successors. The temple schools within continued to function. Scientific texts were still being written in the traditional script in 20 B.C. Before Mesopotamian civilization lost its individuality, its major achievements had already been passed on to Greece and Rome.

In a real sense Mesopotamian civilization might be said to have reached the zenith of its achievement in the Uruk period before 3000 B.C. At least in the realms of art and architecture, the remains of that age rank highest by contemporary standards. As a whole the seals and bas-reliefs of the Uruk phase appeal to modern taste more than later works (save for a couple of masterpieces from the age of Ur); the Uruk temples with their severe lines and modest decoration of clay mosaics must have looked at least as attractive as the more pretentious structures of historical periods. And did any subsequent intellectual achievement surpass the feat of inventing a workable system of writing and ciphering? Though the script was later simplified, the general line of development was apparently laid down in Uruk times. Great technical inventions—which included the metallurgy of copper, silver and lead, the wheeled car and the potter's wheel—were known by then; many even of the distinctive applications—forms of tools and weapons—persisted till iron was introduced towards the end of the Kassite period, and no major innovation originated in Mesopotamia. The economy, too, must already have been so organized as to ensure an adequate surplus from the soil and supplies of raw materials from trade.

But in other domains the creative genius of Mesopotamian civilization was far from exhausted. The theocratic city-state took its final form only in the Early Dynastic period. The kings of Akkad and of Ur were the first

to realize the conception of Empire that Egyptians, Hittites, Assyrians, Persians, Greeks, Romans, Arabs and Mongols were to imitate and improve. In the domain of science it was under Hammurabi and his successors that the temple clerks invented place value in arithmetical notation and discovered the methods for the solution of quadratic equations that we use today; the greatest astronomical triumphs (including recognition of the precession of the equinoxes) were achieved when Babylonia had lost her autonomy altogether under the Persians and Seleucid Greeks. The Code of Hammurabi was only the first step in the elaboration of a system of civil law that anticipated—and according to some authorities inspired—many of the rules of Roman jurisprudence. At the same time banking was developed on surprisingly modern lines only after the abandonment of imperialism forced Babylonia to cover her natural deficiencies by peaceful trade and finance.

There is no point at which one can write "Here endeth Mesopotamian civilization". No doubt the Sumerian governing class had killed itself off in fruitless wars by 2000 B.C. But its language was used in liturgy for another two thousand years—just as is Latin in the Roman Church. If, then, the last remnants of the old literary scholarship expired, its major contributions and too many of its limitations had already been absorbed into Hellenism for transmission to Rome and Islam. The material basis of the old civilization endured for a further 1200 years. Only then did misgovernment and neglect, combined with the secular elevation of the fields above the watercourses, ruin the irrigation system perfected in Early Dynastic times. And soon the growth of oceanic navigation began to divert from the Tigris-Euphrates valley the trade-routes that had converged there since the prehistoric Jemdet Nasr period.

British Museum

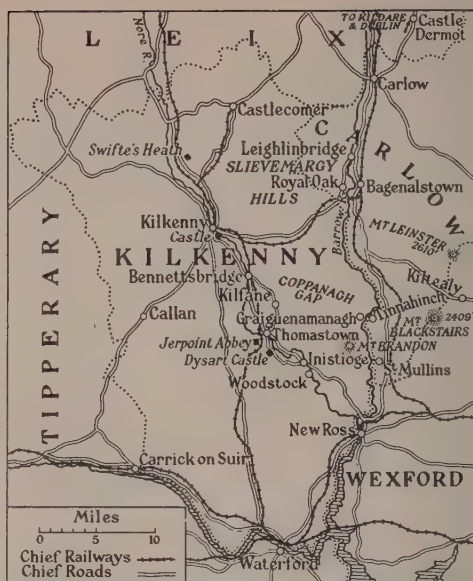


A Kilkenny Journal

by JOSEPH HONE

Mr Hone, whose recently published Life of Yeats showed him to be a profound and skilful interpreter of his countrymen, records here in the form of a journal a visit he recently made on our behalf to Irish scenes that have a particular charm and interest for him

WHEN I used to visit Kilkenny in the years before the last war it was to take part in an annual two-day cricket match on the Show Ground outside the town. The game started at eleven, and one could leave Dublin the



Irish Tourist Association

The Nore, celebrated in Spenser's poetry, is one of the four rivers—Slaney, Barrow, Nore and Suir—which drain the rich centre of Ireland in courses roughly parallel to each other

same morning, by train, and be at Kilkenny an hour or more before the match was due to start. It was said, I remember, that we owed these excellent facilities to the then Marquis of Ormond, who had arranged with the railway and steamship companies concerned that by leaving London overnight he should be at his castle in Kilkenny in time for breakfast. Today it is not so easy; the mere eighty miles between Dublin and Kilkenny are a matter for some thought, and I have preferred the motor coach to the train, and have taken with me, as a guide-book to pass the time, Skinner's *Post Chaise Companion*, published in 1786 and advertised as containing a new and accurate description of all the direct, principal and cross roads of Ireland, together with particulars of the cities, towns, curiosities, antiquities, castles, ruins, manufactures, gentlemen's seats, loughs, glens, etc.

The road is the same road as was traversed 150 years ago by the Post Chaise. From Kildare to Castle-Dermot the country is in

general agreeable, and well planted; but on the further side of Castle-Dermot peat appears and the scene alters, and the road, an extended right-line for several miles, becomes very tiresome. Nearing Carlow a number of gentlemen's parks, though walled in, give things a more cheerful appearance, and Carlow itself, the seat of a modern beet factory, is a good town, pleasantly situated on the Barrow, one of the three rivers on which Spenser sailed his poetic barge.

The first the gentle Shure, that making way,
By sweet Clonmel adorns rich Waterford;
The next, the stubborn Newre, whose waters grey,
By fair Kilkenny, and Ross-ponte board
The third the goodly Barrow.

Bernard Shaw is a landlord in Carlow, through his mother, a Gurley—there are Gurley monuments in the Protestant Church—and I spent our few minutes' wait there in admiring the house which he has presented to the town for a technical school, stipulating



Irish Tourist Association

Kilkenny Castle, the seat of the Butler family, viewed from St John's Bridge, Kilkenny. Across the water are the grounds of Kilkenny school, where Swift was educated

only that its 18th-century front shall be preserved. After Carlow the ride for eight miles along the Barrow to Leighlinbridge is delightful, with the ground to the left swelling gradually into mountains, and the interjacent tracts well planted, filled with pleasant white cottages. The coach enters the county of Kilkenny at Royal Oak, makes a detour into Carlow to stop at Bagenalstown—which a former owner, a Bagenal, planned to turn into an Irish Versailles—and runs into the city of Kilkenny with the Slieve Margy hills on the right, leaving the line of Mount Leinster mountains in the far distance.

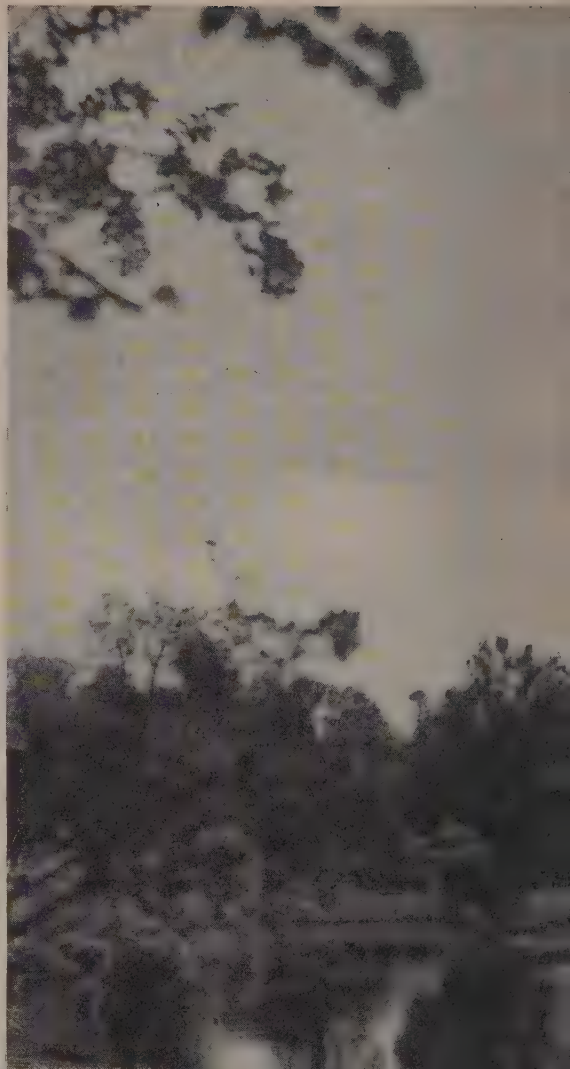
* * *

The aged Marquis of Ormond has recently died in England, and the great Castle of Kilkenny is let to the Irish army, but Edmund Curtis, the historian, whom I meet in the hotel, is able to take me through the great Corinthian gate on the Parade into the Muniment or Evidence Room, where are still deposited possibly the most valuable Anglo-Irish records in existence, upon which he has been working for years.

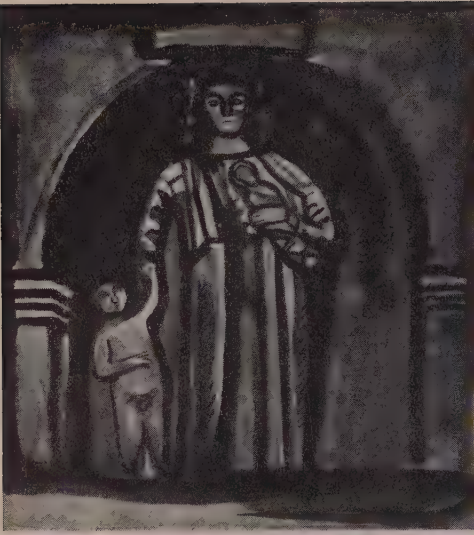
Afterwards we walk down to St John Bridge, when the Castle appears most impressively, standing upon a precipice, with a rapid descent to the Nore. We talk of the Normans in Ireland, a subject upon which he is the leading authority. For this town formed part of the territory which Strongbow acquired by marriage; his daughter and heiress married the Earl of Pembroke who built the original Castle. It was purchased in 1391 by James

(Right) *At Graiguenamanagh are the remains of one of the many Butler castles scattered over Kilkenny. The river is the Barrow, and the Brandon mountains are to the left. (Below) This Norman castle, which was lived in till recently, is in the grounds of Swift's Heath*

By courtesy of E. G. Swift







Evie Hone

Butler, 3rd Earl of Ormond, a ruler of the great Palatinate of Tipperary, and henceforth—up to our time—the history of Kilkenny is linked up with that of the Butlers.

Though not much remains of the original building, except three ancient towers, no other town in Ireland possesses such a conspicuous monument as this Gothic reconstruction, fortified with high walls. Spenser came here at the invitation of the celebrated 10th Earl, a cousin of Queen Elizabeth. The

next great Butler was the 1st Duke, leader of the Protestant Royalists during the crisis of the Stuart Monarchy, Charles I's Viceroy, and also his richest subject, who provided Kilkenny after the Restoration with one of the most magnificent courts in Europe. But in spite of religious wars the Ormonds always maintained friendly communication with their Roman Catholic cousins, and the great Duke's grandson, Swift's loved friend, had to fly to France at the Hanoverian accession. He lost the Dukedom, and his successor renounced politics, but he continued to affect a great social state up to times well within living memory. In 1903 the Castle was the scene of a great gathering of contemporary courtiers when King Edward VII stayed in it on his Irish visit. For centuries, through its possessing families, Kilkenny was always closely attached to the English connection, and the Irish loyalists in the early Edwardian period enjoyed a kind of Indian summer of which this royal tour was the climax. Landlords were selling out to their tenants under the Wyndham Land Act, but the Act gave them good terms, with the prospects of living comfortably on their demesnes, and a disturbance of the Union then seemed further off than at any time since the rise of O'Connell. I said something of this kind to Curtis, but he replied that King Edward himself after his two visits realized that he was not in any real sense King of Ireland.

* * *

Last night I read the *Travels in Ireland* (lately published for the first time in the *Dublin Magazine*) of the famous French liberal Catholic, Montalembert, who visited us in 1830; at Kilkenny he breakfasted with the Roman Catholic Bishop of Ossory, Dr Kinsella, who said that his best friend was the Protestant (Church of Ireland) Bishop, and then regaled him with illustrations of the absurd disproportion between the revenues of the Established Church and the size of its congregations. Today I spent some hours among the ecclesiastical buildings and remains of Kilkenny. Seven-eighths or more of the ten thousand inhabitants of Kilkenny must be Catholics, and to the Catholics belongs St Mary's Cathedral, built since Montalembert's time, also a large modern church, and the Black Abbey, a Dominican foundation of the 13th century, restored in the 19th century by that Order. But with the exception of the Black Abbey, the older churches of the city—St Canice's, St Mary's, St John's—remain in the possession of the former Establishment. The hill on which the Cathedral of St Canice stands used to be

(Opposite) . The anonymous religious art found in parts of Ireland is a subject that awaits treatment from the sympathetic historian and archaeologist. These two drawings by Miss Evie Hone, whose work in stained glass has won great appreciation, are from monuments in the churches of St Canice and St Mary in Kilkenny. (Right) St Canice's Cathedral is in the old Irish part of the city of Kilkenny. The Round Tower is 108 feet high



Irish Tourist Association

called Irish Town, as that whereon the Castle stands went by the name of English Town, and each of them sent two members of Parliament—hence arose the legend of the Kilkenny cats. The congregation at St Canice's is sparse enough. A few, I would judge, are from country houses round about or from the dignified Parade; there is a sprinkling of working-class, and the Irish army is represented by a solitary figure in uniform. The preacher alludes to the war, and I notice how many of the modern memorials on the walls commemorate figures in British military history from Waterloo onwards—more such will be added. When service is over I examine this dove-grey building with the nave divided from the aisles by columns of black marble; it has been decently restored at various times. Cromwell's troops destroyed the east window and the old roof, but left untouched the marble chair of St Keiran, and in the aisles are many ancient monuments of mitred bishops and armed knights: old Ormonds, Mountgarrets, etc. I fancy that the medieval sculpture on the sides of the old tombs seldom attract observers, but they are interesting examples of Celto-Norman art. The glass of the east window was very beautiful and it was coveted for Italy by the Papal Legate Rinuccini, who attended the Irish Catholic Confederation (1642–8).

After leaving the Cathedral, I go up Parliament Street and pass the site of the meeting-place of the Confederation which united for a while the 'old English' (really Norman Irish), of Roman faith with the Celtic chiefs,

in face of the Puritan danger, and acted as a *de facto* Government of Ireland under the very nose of Charles I's Viceroy, Ormond, himself closely related to Mountgarret, President of the assembly.

* * *

Made a tour of Kilkenny with Edmund Curtis, who dwells upon the importance of the Norman strain in this part of Ireland. This is as much marked in the general population as in the old landed families, represented about the streets by well-dressed women (their male relations are mostly abroad), who have come in from neighbouring country houses to sell their garden produce at the greengrocer's shops, which are very numerous. Church of Ireland clergy are also in considerable evidence. Dawdling about High Street and the Parade, you might imagine at moments that you were in an English cathedral city, with a touch of French shabbiness added. The big Catholic institutions—Loreto Nuns, Presentation Nuns, De La Salle Brothers, St Kiernan's—are mostly on the outskirts of the town. The best known hotel in Kilkenny is still, as I remember it thirty years ago, hung from top to bottom with cartoons from *Vanity Fair*, depicting notabilities of the House of Commons, of Pall Mall clubs and of Newmarket in the 'nineties. Yet this hotel is run by Catholics—as indeed is by far the greater part of the business of Kilkenny: Smithwick's Brewery, Crotty's Bakery, the 'Monster House' of the Duggans, "recognized in English and foreign markets as



(Top, left) *High Street, Kilkenny.* (Middle) *Stone bridge on the Nore at Inistioge.* (Bottom) *At Mt Juliet on the Nore, seat of Major MacCalmont, who bred the Tetrarch.* (Opposite) *Swift's Heath.* One of the rooms over the green-house is said to have been occupied by Dean Swift, whose uncle built this house

Irish Tourist Association



Irish Tourist Association

one of the largest cash buyers of stock lots". We pass a modest greengrocer's shop (Catholic also); the brother of its owner occupies one of the highest posts in the British Civil Service. Certainly, except for the naming of the streets in Irish and the soldiers of a national army, the outward signs of political and social revolution that have taken place since 1920 are very few. Manners remain long after their present causes have been removed. We go on to look at what remains of the old Catholic 'English' town—Rothe's house in Parliament Street, with its two courtyards, Archer's house and Shea's house in High Street, Grace's old castle in High Street, now called the court-house, Kytler's House in St Cieran's Street, the house of the witch, Lady Alice Kytler. Yeats has written some lines on "that insolent fiend", Robert Artisson:

To whom the love-lorn Lady Kytler brought
Bronzed peacock feathers, red combs of her cocks.

In return for these, ghostly brooms provided manure for her son's lands by sweeping all the filth of Kilkenny up to her door. Here and there between medieval and modern are remains of the Protestant 18th century such as the beautiful Palace of the Bishop (which incorporates the oldest inhabited house in Ireland), the Tholsel, Kilkenny College, and the well-bred Parade, which recalls the days when Kilkenny had a 'season', and young ladies who had failed to find husbands in Bath came here for the balls and amateur theatricals, which were famous. Kilkenny College is the oldest school in Ireland; the Ormonds intended it to be the Eton of Ireland. It was never quite that; but Swift was here for eight years, with Congreve as a younger contemporary, and Berkeley, the philosopher, followed him, and in the 19th century came

Irish Tourist Association



Banim, the first Irish novelist, Magee the eloquent Archbishop, and Admiral Lord Beatty of the last war. We knock at the door and are taken for Americans come in search of Swift records. There are none. The old school-house has vanished, and with it has gone the table on which Jonathan cut his name, and no registers of his date survive. The present nobly proportioned building was erected in 1782, and like the earlier, stands on the edge of the level fields by the Nore, while on the other side of the river rise the towers of the castle. Kilkenny College remains one of the most important Protestant boarding-schools in the South of Ireland; but it has had vicissitudes, at the height of one of which, not so long ago, occurred an incident—unique in the history of schools?—the flight of a headmaster.

* * *

Spent an afternoon at Swift's Heath. It is a late 17th-century house with a modern Italianate façade, and was built by Godwin Swift (the 'e' has been added by his descendants), the 'wicked uncle' of the great Dean. Mr Swift showed me a beautiful christening robe, said to have been worn by the author of *Gulliver's Travels*, and also the bedroom that is called Swift's room. It seems hardly likely that Swift when a child was given a room of his own by his uncle, a much married man with a very large family of his own, whom his nephew accuses of unkindness. Swift was born in a sombre quarter of Dublin, and when a year old was taken, as he himself tells, from Dublin by his nurse, who was under the necessity of seeing a relation in England, where he remained for three years. He entered the school of Kilkenny at six; but he does not say where he was between the ages of four and six. Possibly in this pleasant

house, his connection with which has been overlooked by his innumerable biographers. He must at least have often visited here during his six long years at the Kilkenny school. Swift's Heath has other literary associations; for among the Dean's collateral descendants we find the lady Sophia Swift, to whom Landor addressed so many poems as "Lanthe", and her son was William Swift, a friend of Landor and Goethe and author of *Wilhelm's Wanderings* and of verses in praise of the ladies of Weimar. This William Swift was one of a number of English and Irish boys, sent to Germany for their education, who upset the court of Weimar by their very Britannic horse-play and roused (as readers of Eckermann's *Conversations* will remember) some envy in the breast of the great apostle of culture when he contrasted them with the too metaphysical young Germans. On leaving Weimar Swift was presented by Goethe with a medal, which subsequently was lost "in some flying leap in some ditch in Kildare".

* * *

Turned my bicycle southwards today, taking the road that leads to Bennettsbridge by the left bank of the river, with very pretty views on both sides. A few miles outside of Kilkenny, where the Nore is bordered by willows, immense ruins make a spectacular appearance in a Corot-like landscape. In these mills beautiful chimney-pieces were once cut and polished by aquatic machinery, invented by a Mr Colles, a native of Kilkenny, and it is said that his enterprise was brought to an end by the aesthetic movement of Oscar Wilde, who advocated the substitution of oaken mantelpieces for marble ones. At Bennettsbridge one is heartened by the flour mills at work and by a lovely old arched stone bridge. Leaving the river on my right,

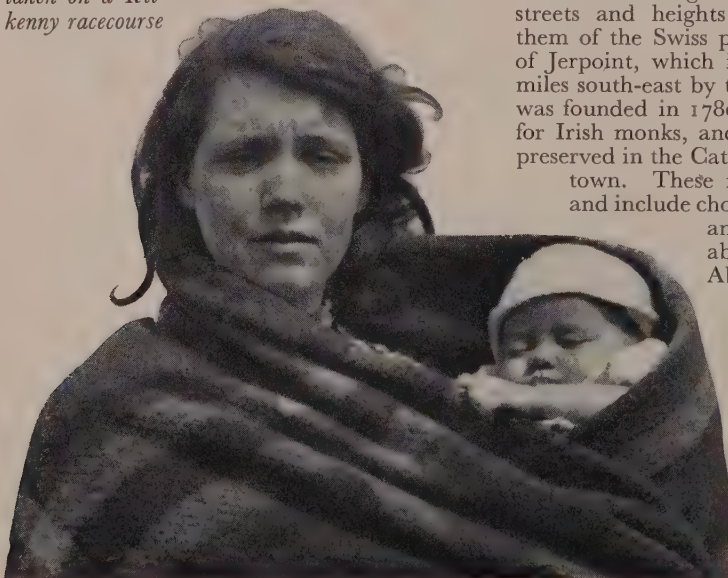
By courtesy of E. G. Swift





Dr Schwartz

A Kilkenny racing crowd (above) on Easter-Monday. The figures in the foreground are a familiar sight at all the point-to-point races in the county. This portrait (below) was also taken on a Kilkenny racecourse



Dr Schwartz



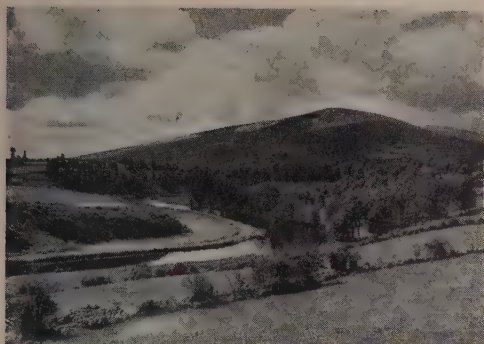
Irish Tourist Association

Kells Abbey, six miles from Kilkenny, was founded in 1183 by Strongbow's followers, who brought the monks from Bodmin in Cornwall

I find my way to the glen and dell of Kilfane and to the house of that name belonging to the Powers, which has a renowned library and a David portrait of Napoleon.

To step into Kilfane is to slip into the living 18th century; all things in the house—books, furniture, pictures—are as fresh as when they were first put together. The owner bears the name of one of the old Norman families of the South of Ireland, and is a woman—how many solitary women dedicate themselves to the preservation of old Irish country houses! I come back to the Nore at Thomastown, which is about twelve miles south of Kilkenny, and makes a centre for some interesting excursions. Its narrow streets and heights have something about them of the Swiss picturesque. The Abbey of Jerpoint, which is about one and a half miles south-east by the road over the bridge, was founded in 1780 by the King of Ossory for Irish monks, and its high altar has been preserved in the Catholic Church of Thomas-

town. These remains are very grand, and include choir, cloisters, an airy tower and some fine tombs of abbots. After visiting the Abbey I find another road out of Thomastown which climbs a wooded hill and overlooks the little Castle of Dysart on the meadow-land by the river. Here Berkeley, the philosopher, passed his childhood, and in a cave on the same banks a little further on lived a more popular writer—



Irish Tourist Association



Irish Tourist Association

(Left) River Barrow at Graiguenamanagh, Mt Leinster in the background. (Right) Jerpoint Abbey on the River Nore. The square tower is the most perfect portion, but the cloisters remaining are also impressive

James Freany, whose *Life*, written by himself, "from the time of his first entering the Highway of Ireland until his surrender" was a best-seller all over the South of Ireland a hundred years ago. This road brings me to Inistioge, another village of curiously foreign aspect, once dominated by the Tighes of Woodstock. It was from Woodstock that Lady Ellen Butler and Miss Ponsonby, tiring of social life, made escape to their retreat in Wales to earn celebrity as the 'ladies of Llangollen': "those *chiennes*", Creevy, who visited Woodstock in 1829, called them. Creevy had for hostess at Woodstock the Duke of Richmond's daughter, that Lady Louisa Tighe who was at her mother's ball on the night before Quatre Bras and lived into this century. My *Post Chaise Companion* describes Woodstock as "a superb and beautiful structure in the centre of a sloping wood of five hundred English acres, and hanging in one noble shade to the river Nore". The house vanished during 'the troubles,' and the trees are all cut. But in the village of Inistioge are some memorials of Tighes: the Priory Tower (where Lady Louisa lies) was adapted for a mausoleum for the family and in the churchyard, under a small Georgian building, Mary Tighe, a popular contributor to 18th-century polite literature and author of *Psyche*, awaits a joyful resurrection. On her slab rests her effigy by Flaxman, and behind the poet's head squats an angel or Greek god, with circular 'fairy' wings.

* * *

Coppanagh Gap, where the ice once moved slowly into what is now the valley of the Barrow, is like a piece broken evenly off the lip of an earthenware crock. The climb up from Thomastown and the Nore has been gradual, then past a farmhouse and a belt of

trees comes the view of the Blackstairs and Mt Leinster, of Brandon and the distant sea and landscape merging into one beyond Wexford. On this high ground harvesting is a week or two later than down below, and the people are familiar with snow and hard winds blowing across from the Galtees and the western coast. The woods about Graiguenamanagh spread southwards over the high humped banks made by the river as it turns and twists back on itself to pass the barrier of granite and move south more freely to New Ross and Waterford. In Graigue, as the people call it, part of the Cistercian Abbey founded in 1204 by the Earl of Pembroke shows here and there in the structure of the present church. The town too has spread over the old buildings so that their walls can be traced through the backrooms of butchers' shops and the warehouses and bakeries which do business with a wide countryside. The main street recalls places in Normandy, yet the draper whose goods flap about the doorway, the gloom of the saddlers and the dust of flour-bag atmosphere in the general stores are Irish enough. Perhaps this impression is given by the grey jumble pattern of roofs, the long graceful bridge across the Barrow or from some less definable association. Here in fact are two towns; on the Carlow bank is Tinnahinch, and the 16th-century castle built by some of the Butlers is now part dwelling-house, part ruin. The county architect has built ground-floor cottages of admirable design, large-windowed and convenient they seem, while his Kilkenny confrère has placed a line of two-storied red-tiled houses above the main Kilkenny roadway. Although the county boundary follows the Barrow until it joins with the Nore eight or



Evie Hone

The remains of the old church on the Power estate at Kilfane contain this ten-foot effigy of a crusader whose name is Cautwell. The stone coffin-lid on which he was sculptured, now placed upright against the wall, has been exposed for centuries to wind and weather

nine miles further down, it is not until the Blackstairs and Mt Leinster are reached that the real division is made. In spring and early summer more flowers are to be seen in the hedges and along the roads than in any county I know. It is only slowly that the surprises of this apparently unadventurous countryside reveal themselves. One's idea of the lie of the land is always changing; climb Mt Brandon and you will see the villages and townlands, cornfields and meadows, so credible on their own level, now like plasticine models against the unreal background of the mountains; go along the canal which runs parallel with the river and the world is quiet, enclosed, only the flop of a trout breaks the soft, water-silk reflection of the trees. The atmosphere of the place has settled down around the stranger who gradually becomes accepted there, for the people are friendly but not as visitor-conscious as those in many other parts. One comes to

realize that in such districts where the small and relatively unimportant towns provide few distractions and a certain number of young people find work in flour or cloth milling, in other small industries or in employment on the land, that, unrecorded and unaware of itself, may be far more of the past as it is lived now than in any of the more written-up folklore districts. The custom of young men forming themselves into bands of mummers (or going individually) to celebrate weddings, provides the problem of working out a new disguise, for on no account must he be recognized. Sometimes an elderly man will have maintained his reputation for the unusual, and one family at least practise on stilts and spend some of the winter evenings making masks and contriving elaborate wigs of horsehair. There are also the poets who will make a rhyme 'on' anyone or a given incident, the rivalry of two football clubs, for instance, being recorded in this way. One might take it that this applies to part of south-west Kilkenny also, although the practice is better in Wexford.

Houses in Kilkenny and Carlow are generally tidy and built of grey stone whitewashed round the door and windows, with slated roofs of an orange to grey colour. There is a definite tradition in hedging or topiary, and fantastic animals and birds frequently rise from some neat, thick line of thorn or yew. The people are a comely breed, usually with oval faces, dark-brown hair and eyes of the same colour and under-sized as compared with most Irish counties (perhaps here the Norman strain tells, for the Normans had no height). In an individual you may come across an interesting turn of speech, but there is little poetic imagery.

* * *

At St Mullins there is a large mound on the green, presumed to be a Norman mote and bailey, an Early Celtic cross in the graveyard and ruins of the 12th-century church of St Moling, whose book is preserved in Trinity College, Dublin. The MacMurrough Kavanaghs, Kings of Leinster—a family that still survives and was recently allied by marriage with the Fitzgeralds (Dukes of Leinster)—were buried here. Other tombstones depict Roman soldiers at the Crucifixion dressed in 18th-century British uniform. The date of the pilgrimage to the Holy Well is still kept as a holiday. The green is occasionally the scene of a scrap between rival districts. The Barrow is tidal as far as St Mullins, and here the canal begins, leading eventually to Dublin.

Stockraising in the Fijis

by ALEXANDER HALL

Last month Sir Harry Luke described for us the Gilbert and Ellice Islands of which, with the Fijis, while High Commissioner for the Western Pacific he was Governor up to the outbreak of war. In this article Mr Hall writes as a farmer of his experiences in the Fiji Islands before and during the war of 1914-18

SOME years ago, with a partner, I owned a property of some 20,000 acres at Bua on the island of Vanua Levu, one of the only two large islands in the 250 which comprise the Fijian group. The other is Viti Levu, on which the capital, Suva, is situated.

Bua is roughly 120 miles from Suva and our only means of transport was by cutter. The larger part of our estate was on Bua Bay, into which flows the Bua River, a stream only ten miles long, but navigable for craft drawing not more than six feet, to the spot where our house stood—about four miles from the mouth, opposite the large Fijian village of Bua. The back of this block of land rose steeply to about 2000 feet and was covered with dense bush of no use for anything. Below the bush was open undulating country on which grew indigenous grasses, scrub and patches of timber. Here we grazed about 1000 head of cattle and 1500 sheep. Below this again was a coconut plantation on a strip of rich black soil running along the river-bank. The remainder of the property was a grass-covered, razor-backed promontory

which formed one side of Ruku Ruku Bay and was about nine miles by bush track from our house.

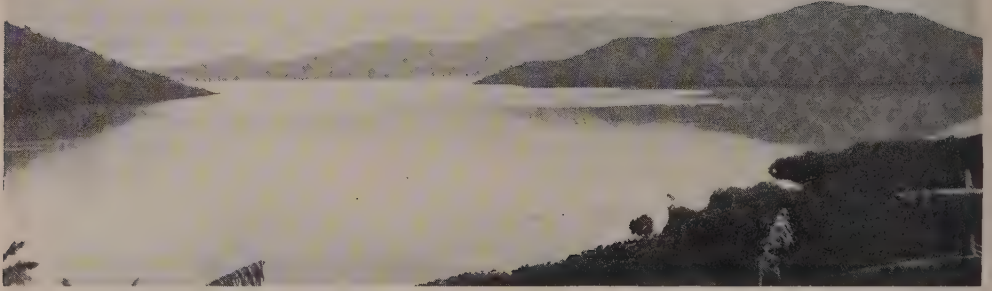
Ruku Ruku Bay is one of the best and safest anchorages in Fiji, for it is completely landlocked. The entrance is not visible except when one is sailing close inshore, but inside one discovers a lovely stretch of water three miles long by about a mile wide. This bay is never used by shipping except in bad weather, as there is no white settlement for miles around. The small village of Koroinasolo stands on a knoll at the head of the bay, and when we eventually fenced in part of the country and took cattle over there to fatten them for shipment to Suva, we always referred to this part of our land as the Koroinasolo block, and when working there slept in the village.

The previous owners, from whom we bought the land, had let everything go to rack and ruin. The cattle were as wild as March hares, the sheep were all over the country and there was not a fence anywhere except just round the house. We thus found ourselves with a tough job on our hands, and being new to the islands did not make things any easier. We began by getting hold of a half-caste overseer, Jimmy McGoon, who stayed with us for many years. The next thing was to secure Fijian labour, and at McGoon's suggestion we sent him over to a district he knew in Viti Levu to recruit 'boys'. The usual method of doing this was to offer a 'present' of £1 to any Fijian who appeared willing to sign on. McGoon brought back twenty 'boys' whom we took to Nabouwalu, some twenty-five miles from Bua, and signed on before the District Commissioner, for twelve months (Fijians could only be engaged annually) at a wage of £15 per annum.

We were now in a position to start setting our newly acquired property in order, but it was some time before we understood how to get our boys to work. Fijians are naturally lazy, which is not surprising. The rich soil



Stanford, London



Photographs by the author

(Above) *Ruku Ruku Bay. Koroinasolo is on the left, with shipping yards in the dark patch of bush by the water's edge. Vessels of any draught can anchor within 100 yards of the shore.*
 (Below) *Preparing a feast in Lekutu, a large village at the mouth of the Lekutu river about 25 miles from Bua*



of the islands produces vegetable foods such as yams, taro, kumalas (a kind of sweet potato), breadfruit, etc., in abundance, and pineapples, oranges, lemons, pawpaw and other fruits grow wild. Thus with occasional fishing or pig-hunting they can live very well with little effort. The only work Fijians are called upon to do is to keep their villages clean and tidy, occasionally re-thatch a grass hut or build a new one and tend their gardens. All of which takes up very little of their time.

I remember 1000 inhabitants from various villages going to the head village of their district to build a meeting-house. Obviously such a large number of men could not get near the building at one time, let alone work on it, so while perhaps a couple of hundred worked, the remainder sat about smoking, gossiping and eating up all the food in the village. *Malua* (wait) is a Fijian word which well expresses the natives' attitude towards life. After all, why should there be any hurry? The sun is always shining and tomorrow is just another day.

In view of the indolent life led by Fijians in their villages, it may be wondered why they ever sign on for work. In practically every case the reason is money. There may be something they particularly want to buy; they may owe money to the local Chinese store, or it may be simply a matter of raising the small tax they are called upon by the Government to pay. Whatever the reason,

the only way in which the average Fijian can raise money is to sell his services.

The boys McGoan brought over from Viti Levu had been indentured before and knew all the tricks by which work might be avoided. They quickly realized that we were green-horns as far as labour was concerned, and took full advantage of our ignorance. They were, as we discovered later, not in any way comparable with the people of Bua province, and I put this down to the fact that, living in Viti Levu, they had come too much in contact with white men, for whom they had lost their respect.

Until we learned to speak their language we were never able to get good work out of them, but once that difficulty was overcome we had little or no trouble. By trying to understand their individual characteristics and make allowances for their failings while appreciating their virtues, we attained a reputation for fair dealing throughout Bua province, with the result that we never had to go elsewhere for labour after the expiration of the first twelve months, when our Viti Levu boys left. In fact a few local workers



(Right) *Levuka, one of the oldest white settlements, is on the small island of Ovalau.*
(Below) *Wilisoni, one of the author's Fijian 'boys', spearing fish at the mouth of Bua bay. Coastal Fijians are experts at this sport, particularly at night with torches to attract the fish*



became permanently part of our establishment. Two of these, Ilai and Wilisoni, remain in my memory. They were absolutely trustworthy and nothing could shake their allegiance to us. We felt we had lost a faithful friend rather than an employee, when the former was drowned a few years ago, trying to save the life of another man after their canoe had upset in a heavy sea. Lala, a mission boy who had fallen from grace, was another good man in his own way, although a bit of a hard case. He had a keen sense of humour and could tell a very amusing

story. One I remember was a description of how he first preached to a congregation, told with extracts from his sermon and much gesticulation. We taught Lala to ride a horse and he became a very useful stockman. These three boys and several others we never indentured, they remained with us of their own free will.

Before the last war Indians were imported by the Government under an indenture system which was discontinued, I think, in 1917. These Indians were mainly employed by the Colonial Sugar Refining Company

(Top) A small Fiji bush village rarely visited by white men. (Bottom) Bullocks in the yards at Koroinasolo ready to be swum out to a schooner for shipment to Suva



on their plantations and in the sugar mills; but anyone requiring labour could apply for them. The Indians were bound to their employer for five years. At the expiration of this period they had the option of being repatriated or remaining in Fiji. The majority elected to remain, with the result that the Indian population in 1937 was approximately 90,000, compared with 100,000 Fijians and some 4200 white settlers. The cost of Indian labour was 1s. 6d. a day, of which 1s. went to the labourer (out of which he had to feed himself) and 6d. to the

Government to cover the cost of importation.

We never employed indentured Indians but once gave a 'free' Indian, Budu, a job in the house. As a cook he was not a success, and when I caught him one evening wiping the plates with the tail of his shirt we found him an outside job. Two other free Indians, old Gundi and his wife, leased a small piece of our land on which they grew rice and tobacco. They were a good honest couple and tended to raise our opinion of imported Indians, who in no way compared with our Fijians.

Fijian bushmen, unspoiled by civilization, still offer a white man the homage they give to their own chiefs. They make excellent workers and are entirely trustworthy





Looking up the Bua river from Bua village. The author's property is on the right

Bua is a beautiful spot with the best climate I have ever known. The temperature seldom rises above 85° F. and falls as low as 55° F. before daylight in the morning. The rainfall is about 60 inches per annum, most of which falls from December to April, when the direction of the wind is variable. During the remainder of the year the balmy south-east trade-wind blows across the island and the weather is perfectly lovely. Even in the wetter months it never rains for long, and after all, rain did not matter to us, as we always went around during the day in a singlet and a pair of khaki trousers, and if we got wet, soon dried when the sun, never long absent, came out again.

Early mornings and moonlit evenings were unforgettable. Just at sunrise the air is beautifully cool and fresh, not a breath of wind stirs the leaves heavy with dew and glistening in the sunlight, and the face of the river is like a sheet of glass reflecting on its surface the coconut palms which line the banks. The full moon, intensely bright, bathes all the foliage in a silver light and the stillness is absolute.

I realize that there are a great many people to whom our life at Bua would not appeal. We had no form of what one might term

civilized amusement and our nearest neighbour was some twenty-five miles away. We were supposed to get a mail, brought overland from Nabouwalu by native carrier, once a week. That, however, depended on whether or not a cutter from Suva happened to call there and we were at times as long as three months without word from outside. I remember sailing into Levuka harbour (Levuka, on the island of Ovalau, is the next largest white settlement to Suva) one evening in September 1914, and wondering why the leading lights were not lit. On going ashore I learned that we had been at war with Germany for about six weeks and that the leading lights were out because of German cruisers supposed to be in the vicinity.

Sometimes, owing to the non-arrival in the river of a cutter we expected from Suva or Levuka, we ran out of stores looked upon in civilization as necessities, such as flour, tea, etc. We were seldom without sugar, which we bought in one-cwt sacks at £1 each, on account of the sugar ration we gave our boys. Butter we never had, as there was no means either of making or preserving it in the warm climate. We could have bought tinned butter, but without a cooling system that was just like engine oil. We did, how-



Hundreds of Fijians, chanting, and heaving in unison on thick vines, dragged huge trees several miles for the framework of this Meeting House, whose walls, six feet thick, are thatched with leaves

ever, keep milking cows, and there was always an abundance of fruit, vegetables and, in our case, meat. Our fare was simple, but we were probably all the better for that.

We lived a free, untrammelled life in what was to all intents and purposes a little kingdom of our own which more than compensated for any discomforts or inconveniences we may have suffered. We were exempt from the irritating restrictions of civilized life and good friends with the people for miles around, who came to us for advice and assistance when they had a *lega* (pronounced 'lengga')—a Fijian word which may be loosely translated as 'difficulty'.

We did not lead the indolent life of the average planter. Such jobs as mustering and working the cattle and sheep, felling timber, erecting fences, etc., could not be left entirely to our boys, however willing they might be. Consequently there was always plenty to do, which kept us 'fighting fit'. If we wanted sport we could always go after wild pig, which abounded on the property, shoot duck, quail or pigeon, or take the whale-boat and go sea fishing. Pig-hunting could be quite exciting, as we did not go out to kill pigs but to catch them alive. We generally took several Fijians and always three or four dogs

with us, and when the dogs bailed up a pig in the scrub, barking loudly and snapping at its snout, thus holding its attention, we crept up and, when a favourable opportunity offered, one of us would grab it by the hind legs and turn it on its back, in which position it was, of course, helpless. This was a good deal more difficult and dangerous than it may sound, especially if the victim happened to be an old boar.

After a long day in the open, we were always comfortably tired in the evening. Regular working hours for our labour, and consequently for us, were from 6 A.M. to 5 P.M. with a half day off on Saturdays. These hours varied, however, according to the work. For instance, when we went mustering cattle at a distance from the house we left around 4 A.M. so as to be on the spot where we expected to find the cattle at day-break, and often did not get home till perhaps six in the evening. After a bath and a change we had our evening meal about seven o'clock, then sat on the verandah smoking and yarn-ing, possibly discussing next day's work or future plans, and were quite ready to turn in about nine o'clock.

Such was our life at Bua—a happy care-free existence.



Rubber from the Desert. II

by Herbert Stanton Marshutz

These photographs—which should be contrasted with those illustrating my article in last month's Geographical Magazine on the production of rubber from the cultivated guayule shrub in California—show the primitive way of producing rubber from the wild guayule plant in Mexico, where it is still harvested by methods that have been in use since the guayule industry was started fifty years ago. The General Tire and Rubber Company has announced plans for a guayule project in Mexico and will erect an extraction mill in the heart of the guayule area in the State of Coahuila.

(Above) Indians picking the wild guayule shrub which grows in the semi-arid plains of north central Mexico. (Opposite) After the Indians have gathered the guayule they load it on the backs of Mexican 'burros' and take it to a camp where they are paid for what they have gathered. Sometimes the plants are carried in this fashion as far as fifty miles. In the lower picture the workers are taking their guayule to the weighing station in the camp. Upon the weight of the shrub depends the amount of money they get



After weighing, the shrub is pressed into 100-lb. bales by means of this ancient baling machine. A belt (shown opposite) convoys the guayule shrub, root and all, into steel rollers, where they are shredded before being placed in rotating drums or pebble mills. After the rubber has been extracted from the shrub it is dried in trays and pressed into slabs of about 100 lb. each for shipment to rubber factories.

Guayule is real rubber, not a synthetic, and the guayule shrub contains a greater percentage of rubber by dry weight than any other known plant

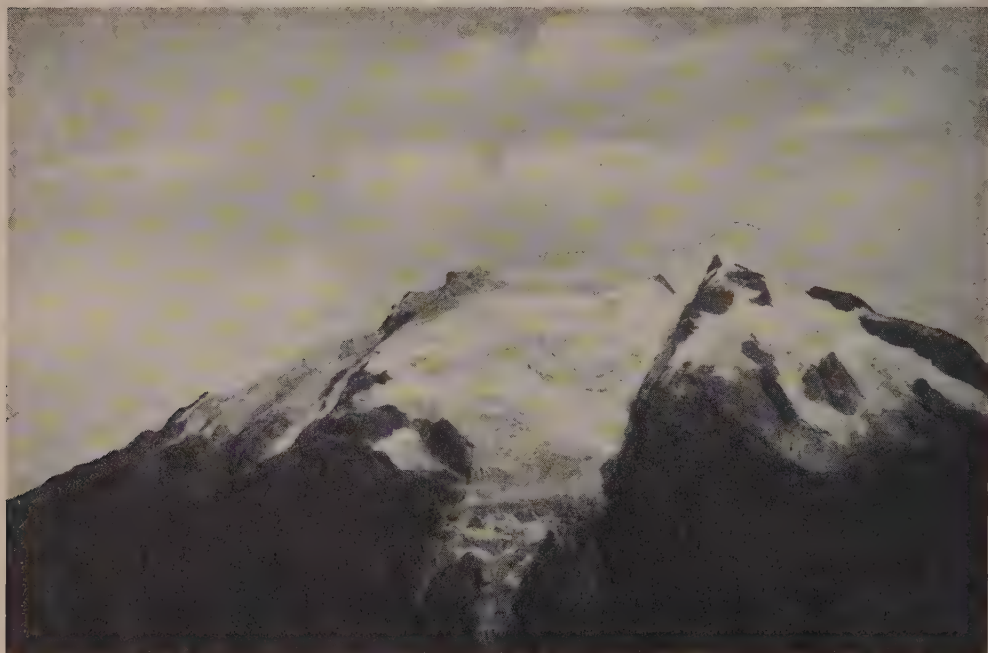




Photographs by courtesy of the Editor of 'Agriculture in the Americas'

The Mountains of the Moon

by ROBIN A. HODGKIN



PTOLEMY said that the Nile rose from a lake lying between high snowy mountains. It is true that Aeschylus, three centuries before, had a line about "Egypt nurtured by the Snow" and Aristotle's Mountain of Silver, where the Nile rose, echoed the legend; but it was Ptolemy who first wrote it boldly down in a geographical treatise in about A.D. 140, and though his reasoning may have been faulty and his siting of the Mountains of the Moon was several hundred miles wrong, it was a good guess. Later map-makers pinned their faith to him and kept these mysterious mountains upon the map, through all the shifting travellers' tales of the Middle Ages, until at last their misty peaks were found to be real by the explorers at the turn of the 19th and 20th centuries.

In 1864 Sir Samuel Baker was within sight of Ruwenzori and saw dim shapes in the haze which he called 'Blue Mountains'. Eleven years later Stanley actually camped upon the eastern slopes without realizing the size of the mountain above him, and rejected the local stories of a cap of white metal or salt. A year

after, 1876, Romolo Gessi recorded that his men saw strange peaks "like snow mountains in the sky", but again European distrust of African imagination delayed discovery. Emin Pasha, had he not been so myopic, ought to have had frequent glimpses during his ten years' sojourn on Lake Albert, but Ruwenzori is shy and wreaths her feet in cloud, and only seldom and then for a short breathless space can the hungry traveller get a full clear glimpse of her distant snows.

Fate gave Stanley a second chance and in 1888 the vision burst on his eyes from the south-western shore of Lake Albert. He wrote: "While looking to the south-east and meditating upon the events of the last month my eyes were directed by a boy to a mountain said to be covered with salt and I saw a peculiar-shaped cloud of a most beautiful silver, which assumed the proportions and appearance of a vast mountain covered with snow. . . . I became for the first time conscious that what I gazed upon was not the image or semblance of a vast mountain, but the solid substance of a real one with its

summit covered with snow. . . . It now dawned upon me that this must be Ruwenzori."

Stanley had discovered the last great unknown feature of Nile geography and had seen the highest summits in the basin. Various attempts were then made to penetrate its fastnesses and reach its summits, but it was not until 1906 that these efforts were crowned with success. In this year the Duke of the Abruzzi, with a large Italian expedition including four celebrated Courmayeur guides and a small army of porters, set out from Entebbe to conquer the peaks. On the highest summit of the range (16,794 ft.), which he named Margherita after the Queen of Savoy, he planted the British and Italian flags. His party also climbed and mapped most of the other big peaks in the range. This work has since been completed by small expeditions, notably those of Dr Noel Humphreys.

* * *

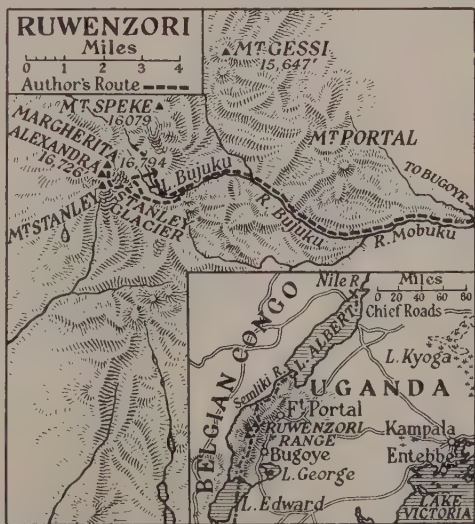
In July 1941, after two years of work in the sandy flatness of the Sudan, where so much depends on the consoling waters of the Nile, my friend Lewis Brown and I spent part of a six weeks' leave on a pilgrimage to the snowy peaks which give birth to it. Having attempted first to climb Mount Kenya, the high volcanic finger which dominates the eastern branch of the Rift Valley, we motored westwards for 800 miles over the rolling grasslands of Uganda towards its western branch. Here the down-thrown hollows of the Albert and Edward Lakes are interrupted by the mighty upthrust of the Ruwenzori massif. At Fort Portal earth tremors still periodically shake the houses and remind one of the great shocks which long ago rent the rift lakes and raised the mountains. From Fort Portal a broad ironstone highway runs south towards Lake Edward. But the traveller on this fine road is fortunate if he catches a glimpse of the snows above him to the west, for the clouds lie constantly about the summits and the reputation of their encircling foot-hills and forests for wetness and thickness does not encourage most people to penetrate much further.

Our little expedition assembled at Bugoye, a small village on the eastern slopes where a branch road stops by the broad torrent of the Mobuku. Here we dumped our Ford in the garage of a helpful chief, stopped thinking about miles per gallon and possible punctures and tried to concentrate on man-day rations and how to ensure the reliability of sixteen porters with whom we had about twenty words in common. Three other porters had been sent ahead of us to start hacking a path

through the forests in which we would be travelling for the next few days. The remaining sixteen were a tough-looking crowd; brown, well-developed men whose native garments were of bark-cloth; but they were on the fringes of civilization and wore the fringes of civilization's clothes—ragged remnants of former expeditions hanging here and there upon them. We supplemented these with a cheap blanket and a gaudy pull-over each. On top of their chocolate skin and russet bark-cloth glared the vivid stripes of their new jerseys—a wild assortment of old school colours. It was a bright cavalcade that set off into the elephant grass towards the great cloud-banks which filled the valleys and veiled the mountains to the west.

We marched for some hours in the floor of the valley with the roar of the Mobuku always with us, though we never saw its rushing torrent till we started to climb out of the long grass and up the steep valley-wall above. The zigzag as an easy means of climbing has not been exploited in this part of Africa and the native tracks go straight up and down the steepest hills. Their surface is not made easier by the elephants which often use them as toboggan runs, leaving behind them as they slide a wake of huge and slippery hoof-marks in the mud. Before evening fell we passed the last cultivation and the last grass hut and entered the forest where we camped in a clearing left by our cutters.

During the next few days we appreciated what excellent porters we had with us. They carry loads almost as well as good Himalayan porters and their technique of scrambling



Stanford, London



fully laden over reclining trees and slimy roots is astonishing. We made them do double marches on both these days in an effort to reach the peaks before the weather broke. Some cigarettes, however, and particularly our medicine chest provided sufficient compensation for the hard work. The favourite mumbo-jumbo in the box was a bottle of very powerful horse embrocation which came to be regarded as a cure for everything from nettle-sting to high-altitude headache. Their treatment for the latter was to rub their chests thoroughly, place a pull-over half over their heads, producing within a powerful atmosphere of turpentine which they inhaled with relish and relief for several minutes.

We also demonstrated the use of cough drops, showing that sucking not swallowing was the technique. They understood from this that the noise made by each suck was the important part of the cure with the result that each lozenge was consumed with a noise like a bath running out.

The hardship of these days was not the distances to be covered, which were often short, but the very exacting nature of the country, which involved steep and long climbs over the densely forested spurs of the Mobuku and its tributary the Bujuku. Towards the end of the second day the gorge-like character of the Bujuku valley became less pronounced and the nature of the forest changed gradually from tall deciduous trees and thick bushes into an almost equally dense forest of tree heathers. These giant heaths grow to heights of thirty or forty feet and are everywhere draped with long grey beards of lichen. This was the half-imagined Brobdingnagian forest I had seen before, lying in the heather of Scotland with eyes on ground level viewing the heather as trees; but there was no imaginary quality in these massive trunks round which we clambered or in the mossy bogs from which they grew, wetter than anything in Scotland. After climbing up and along through this zone we came out into a flat-bottomed open valley at about 11,000 feet. Here by the side of an old lake-bed we came to a large rock shelter where the porters made themselves at home. It was a great overhanging boulder whose roof was blackened with the smoke of previous occupants, mainly coney hunters who come as far as this to set their snares in the tracks of these small and engaging beasts. We pitched our tent out-

Out of the bog grew giant groundsels, their trunks often reaching a height of 30 feet, their heads like woolly aspidistras

side on a relatively dry piece of bog.

The valley, or such of it as was not hidden by the clouds which swathed the higher parts in mist, might have been a Welsh *cwm* judged by its colour and shape; the dull-green greyness of the lake-bed was bounded by the harder greyness of the steep and rocky walls which glistened with the wetness seeping over them from grass and moss above. But the strange and startling feature was the plants growing there. Out of the bogs and sprouting from the rocky ledges grew giant groundsels and lobelias, their trunks often reaching thirty feet in height and their heads like woolly aspidistras in ungainly bunches at the top. We left a fire of groundsel wood smouldering on the damp ground and as we crawled into our tent the peaks above were drifting clear of cloud as the last daylight left the sky. Some time during that night, during a momentary exit from the tent, I had my first clear view of the snows. The sky was cloudless and a nearly full moon shone down with great brilliance on the snows of Mount Gessi, a silver cupola to the north. But the black bulk of Mount Speke (shown in the photograph reproduced on page 304) still blocked our view north-westwards towards Margherita and the Stanley range. Above it the Plough was swinging down, its pointers aiming at a hidden pole star below our high equatorial horizon. Around the tent the bog was hard and sparkling with hoar frost.

Next day the peaks were clear in the cold morning air but down the valley we could see one of the usual cloudbanks rolling towards us and we knew that by noon it would wrap us in its blanket. We had to persuade one of the porters to give us his load and go ahead with an axe to cut a path through a thick little forest of groundsel which barred the way round the corner to the highest reaches of the valley where we hoped to make our base camp. This particular porter, whom we afterwards named *Soir de Paris* because he was so richly perfumed, was much attached to his load of very ripe dried fish. Every night he had begged us as a special favour to be allowed to put his precious cargo beneath the eaves of our tent. He was equally conscientious as a path-cutter and led us through the forest of grotesque groundsels, draped with dripping blackberry brambles, and up onto the last few miles of bog. Brown and I, who were lightly laden, found it more comfortable to leap from tussock to tussock trying to avoid the black mire through which the porters squelched. It was tiring jumping along, at 12,000 feet, for we could already notice the rarity of the air in breathing. As we topped

the last rise we saw stretching towards us a narrow creek of Lake Bujuku and in its still peaty waters were reflected the highest summits of the range, Margherita and Alexandra, white and shining above the thinning clouds.

We reached some capacious shelters of rock beneath a high cliff at the northern end of the lake and pitched our tent beneath one of the overhangs. But there was still much work to be done—paying off unneeded porters, packing food and stores for the high camp which we hoped to establish next day, and the lesser labour of lying on our backs and scanning the steep, glacier-crowned rock-slopes which guarded the approaches to Margherita, looking for a route to the main ice plateau.

The route we followed next morning turned out to be surprisingly good considering the precipitous nature of the valley-walls. It went up a steep groundsel-choked gully where we followed a track whose last user had been a snow leopard. Then the ground-sels thinned as we made our way up a mossy shoulder towards a series of rock ledges. Climbing these for an hour we came to the jagged rock ridge which retains the Stanley glacier in a high trough flowing southwards. Here there was a broad rocky platform where we pitched our tent at 15,000 feet and sent back our five porters with instructions to return in four days' time.

The last few days had been fairly clear throughout the mornings, a rare thing on Ruwenzori, and so we determined to make an attempt on Margherita as soon as possible. We went to bed that night with rucksacks packed, the alarm clock set for 4 A.M. and our boots in bed with us to keep them from freezing. We slept till the shattering tinkle of the alarm woke us with an agonizing shock. But the air outside was crisp and the moon was bright as we started scrambling up the shelving ribs of our ridge. The route we had chosen, after a short reconnaissance the afternoon before, led across a short tongue of glacier and back by a gully to the crest of our ridge. Here in the first sunlight we put on our rope and climbing boots, whose battered old age we had been conserving for the highest climbing only.

Our first problem was to gain the broad ice plateau which spreads out round the summits of the Stanley Range binding Margherita and her several sisters in one glacier system. But before we could reach the main expanse there was a grey icy knife-edge and a swelling bulge of bare ice to be negotiated. We shuffled along the former in small steps which we chipped in its crest. Then for an

hour there was three hundred feet of strenuous step-cutting. Our axes swung and struck; flying ice chips whizzed down off the glacier cliffs, dropping to the Bujuku Glen; and our backs ached with the labour. Eventually we reached the snow plateau and still the sky was clear. Beyond us northwards rose the twin peaks for which we were making. The nearer and lower one had a rocky summit which looked quite accessible but Margherita beyond was a formidable objective. She culminated in an extraordinary pile of snow cornices like a fungoid growth of wedding cake, presenting glistening overhangs in all directions. As we trudged across the plateau we trailed our ice-axes in the snow, ploughing a small furrow which would guide us later in the day, for small tongues of mist were gathering in the valleys, pushing steadily upwards and would soon envelop the peaks about us. We crossed the high crinoline of Alexandra, passing through a spectacular gallery of curtained icicles, and descended to the foot of Margherita by a tricky ice ladder which we cut below it.

The last stage of the climb was the tensest. The mists were closing in behind us; and there was only one place where the first line of overhanging cornices above could be penetrated, and this was above a long steep snow slope swept with icicles which fell from above. We puffed hard as we chopped and kicked our way up the crusty snow and it was with relief that we hauled ourselves over the top cornice on to the main eastern ridge. We scrambled along the shelving snow and rock of its easy side, hoping that like many snow mountains Margherita would not reserve much difficulty for the last few hundred feet. But here we were wrong. Standing thirty feet below the top, we looked up to see that all round it there were large overhanging cornices whose enormous icicles drooped down to within a few feet of our heads. At one point where the drop was smallest I hacked a snowy niche among the icicles where we could stand together. Then standing on Brown's head I managed to cut a smaller niche above, into which I could climb and from which I could haul my way on to the summit crest. Brown succeeded in quitting his niche in this celestial reredos by the use of a rope stirrup lowered from above. A culminating bout of steep step-cutting brought us on to the elusive summit.

We remained there only long enough to take in the view of surrounding peaks, half shrouded in mist, and distant seas of cumulus clouds curiously tinged with red, lying above the distant plains of Uganda and the Belgian



The Bujuku River at a height of 11,000 feet

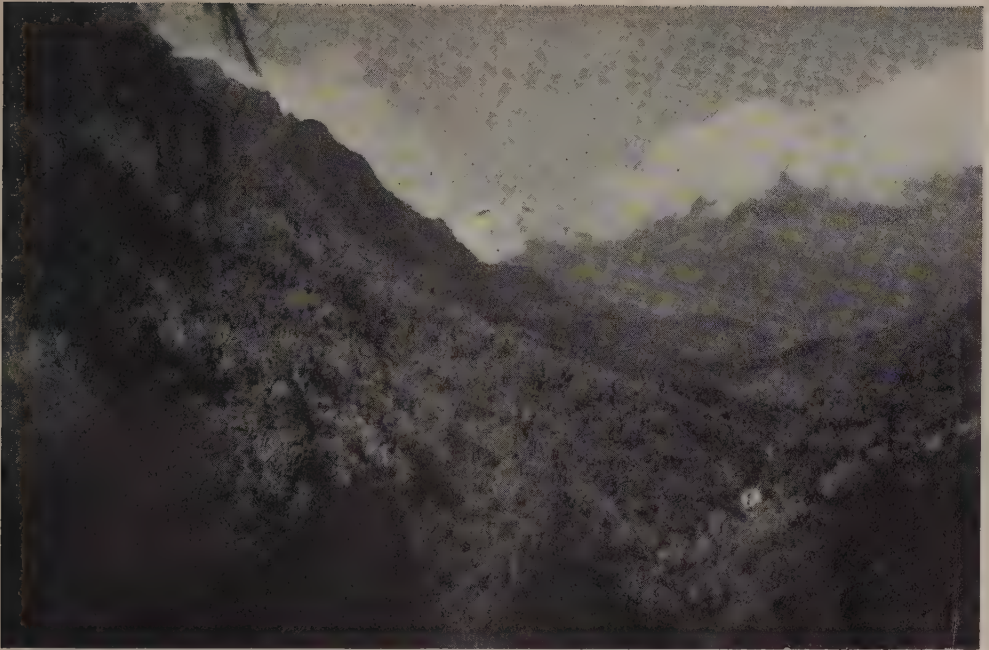


Porters resting in a large rock shelter formed by a great overhanging boulder

Congo. The clouds piling up the Bujuku were lapping at the edge of the Stanley plateau and reminded us that we ought to be returning down the misty slopes of snow and ice. It was a gloomy descent, picking our way through the mist which drowned everything and seems to have blotted out, even in memory, all landmarks but an incidental acid-drop which I sucked as we plodded across the icy plateau. We reached camp tired but content after ten hours' climbing.

We spent two days more in the tent, but the weather was deteriorating and the fine morning we had snatched for Margherita was not repeated. We climbed twice to the top of our own ridge but on neither occasion could we do more than gaze disconsolately into a grey blankness of fog. The mist was thicker than ever when the day for descending came. We plunged down into it from our camp soon after breakfast; and despite our recent ascent by the same route were soon completely lost. We consoled ourselves by saying "As long as we don't go left towards the precipices we will be all right" and "You can't really lose

your sense of direction on a slope like this". The result was that fear of sudden precipices drove us so far right that we lost our bearings completely. The going became awful. Huge, half-hidden mossy boulders beneath dripping rotting groundsel. We slithered and cursed furiously because we knew that somewhere above we had been silly and careless. When we did get below the level of the thickest mist our aneroid showed us to be nearly as low as the camp; but we found ourselves in an odd-looking valley running a strange direction with no sign of the lake or camp. We began to think that the compass was wrong (a dangerous heresy for those who are befogged) or that we had reached the Belgian side of the watershed by some strange manoeuvre. With each wild surmise the surrounding slopes of what little landscape we could see seemed to swing round as we fitted them into the facts and guesses of each new hypothesis. Then this gyrating guess-work suddenly steadied itself. For I had stumbled on a tree marked with an ancient but authentic axe cut like those with which our porters mark the track. I realized that somehow we had skirted



Photographs by M. O. Wray

View of the Bujuku Valley and Mount Stanley from Nyamlega

within a few yards of Lake Bujuku without seeing it and were now proceeding down the valley up which we had come five days before. All we had to do was to turn round and walk back up the valley for an hour. We rejoined the porters at the rock shelter, jauntily trying to look as if we had always intended to arrive back from exactly the wrong direction; but we felt pretty foolish, a state of mind which adventures in mist only too frequently produce.

For the remaining week in the mountains, mist thwarted most of our attempts at climbing. And though we made one or two sallies in the hope of it clearing, and climbed two passes on the main watershed, we did no more big ascents. The porters however were pleased with our success on Margherita, which they celebrated with an extra ration of tea. They sat in their caves, the smoke of their pipes and fires curling out from under the blackened roof, and gorged themselves on a surplus load of brown millet flour. We gorged ourselves on a large tin of haddock.

On our return down the valleys we followed

much the same route. The last few hours' marching towards Bugoye through the elephant grass were at first oppressive. Our feet were sore and our shoes worn out, and the tall, enveloping, face-slapping grass is never conducive to good temper. But as we reached the first villages the line of porters broke once more into one of their undulating, never-ending shanties to celebrate our homecoming. The flattering part about it was that a refrain constantly repeated by the song-leader who improvised the words referred to the two *bwanas* who had climbed 'Mangalita'. We blushed smugly to ourselves, though our conceit was slightly damped by the only other word in the song which we could understand, a recurrent reference to 'backsheesh'. Our thoughts, mellowing under this treatment and the nearness of the rest-house, turned also to the echoing roar of the Mobuku surging invisibly below us. It, too, was on its way northwards to the Nile, to the swamps, deserts and grasslands of the Sudan, and on, further than we could go, to the Mediterranean to mingle with other troubled, snow-fed rivers.



John H. Stone

Steep alleyways honeycomb the slopes of the hill down to Hampstead High Street (left); but the Heath still runs wild. Only five miles from Charing Cross, these rolling acres of grass-land and trees (above) have never been made into a park

London Village

by WILLIAM SANSOM

NORTHWARD from Regent's Park, for many miles there lies a deep dry sea of stucco and bitter brick, the endless sea of Victorian suburban expansion. Between wave after orderly wave of roofs in rows, beneath the endless ranks of windows, up crescents and through squares, along avenues and through rectangular gardens—an imaginary boat can sail its tedious aisles until London in this new settled solidarity seems truly endless and formless, tasteless yet comfortable, orderly and dying on a full stomach: but not, for adventurers, worth the voyage.

Just when the boat is becalmed and disillusioned, the gunwales heave up against

whitewashed, tar-bottomed cottages, against what seems to be a West Country fishing village. This is Hampstead, with a fresher, greener sea beyond—the Heath.

Hampstead proper—that is, the old manor topping a hill less than five miles from Charing Cross—does not, of course, look altogether like a West Country fishing village. The fishing village is only one part of its appearance, of which there are three characteristic aspects. The first of these lies in the predominantly Georgian brick of its houses; houses that stand quietly interlaced in a steep and winding pattern of lanes on the upper slopes of the hill. Herein lies the fishing village, for groups of these houses have been washed white and various pastel shades of the seaboard. Secondly there is an atmosphere, on the southerly aspect, of the fashionable 18th-century spa that was called Hampstead Wells, of which little remains but the immemorial elms, a few names, some fountains—and an air.



Bill Brondt



(Above) *The Admiral's House*. Eccentric Admiral Barton fired cannon from the flat roof of his land-locked ship to celebrate naval victories. (Right) *Whitewash and aged brick line the quiet streets and alleys of old Hampstead*

And thirdly the Heath, the green sea lying beyond: once the pastoral lands of a medieval Hall Grange; once a favourite field of leisure for pilgrims to the shrine of the Virgin on Muswell Hill; once, later, a breeding ground for highwaymen and footpads; and now a fine stretch of grassland and tree and spring and hillock that has never been urbanized, that still remains a charming countryside disciplined only by the natural course of its streams and its vegetating. Part of this is the "appy 'alf of 'Ampstead" that paints its face a bright Edwardian colour for several days each year, when the green-red-yellow and brass fair-engines are pitched for the great holiday.

Upon entering suddenly into Hampstead from the Victorian Sargasso, the first feelings are—that here is still a village, something older and quieter than the rest; an entity, keeping itself whole. The houses seem built among trees, not the trees planted for the houses. There are high walls of old brick

that lean up and down the steep lanes. Narrow alleys of steps—again as in a village in a cove—climb steeply up between tiers of hillside cottages: old iron lamp-standards here, and open cobbled gutterways. It is all up and down and round the corner. Among the bright brass knockers and the bright colours of the doors and windows, among the pale-washed walls and the yellow, green, pink, grey, royal blue doors—here you stumble upon all kinds of quaintnesses. In a small paved courtyard, a house faced with black-painted weatherboarding: around another corner, the Holly Bush Tavern, part of the old Assembly Rooms that were still earlier Romney's Studio: a sudden space, and the Admiral's House, a rambling square-towered structure that has the air of a large white yacht station, and from whose original flat roofs Matthew Barton, Admiral of the Blue and White, startled the villagers by firing the royal salute from his cannon to celebrate naval victories and declaim his



landlogged love: then a serene horizontal moment among the zigzag, when one enters Church Row, a new cadence with its two quiet rows of weather-browned Georgian brick houses, its line of full beeches in the centre of the short broad street leading to the railings of Hampstead Parish Church, the whole set up and little changed since 1745: and through and in and out again to a steep wall honeycombed with big round-topped stable doors: and up aloft to Mount Vernon, with more little houses and a pavement walk between: down to the churchyard, sombre with ivy, holly, cypress, yew, and the other black plants that shadow darkly white urns and marble tombs, as darkly as in a steel engraving.

All this snug confusion is encompassed, in tiers, within a quarter square mile. And here too lies the old Cloth Hill, now called Holly Hill, where once the virgin heath was white with drying linen. Laundering was a main industry of early Hampstead. The nearby springs provided clear dipping water, the windswept heath was a fine spot for drying and bleaching. To this place Henry VIII despatched his washing—conceivably an industry in itself.

Talk of the springs leads us down over the High Street to the southerly quarter of Hampstead, where once the Pump Room and the Wells made of the astonished village an ephemeral resort. At the turn of the 17th century private interests decided to popularize the chalybeate waters, pleasure gardens were laid out, a Great Pump Room was built. By 1703 the affair was in full swing. Hampstead had become a place of fashion. Balls were held, “consorts of musick” were arranged, and daily by coach there arrived a select assembly of ladies of fashion, beaux and bucks, to drink the ferruginous and sulphurous waters. The Kitcat Coterie arrived. Addison, Steele and others wandered along the elm walks where later Keats was to discover his nightingale.

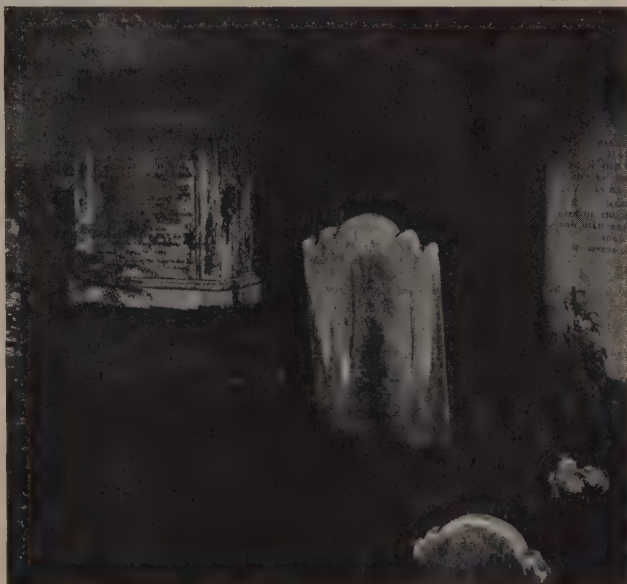
But the disreputables and the roughs descended. Gaming, brawling and other evil practices scandalized the elegance. Soon Hampstead’s name became so bad that fashion

abandoned it for good and all. An attempt was made in 1734 to repopularize the Wells, but never again was their first reputation really recovered. The place became a resort of secondary importance for several years: during this time Johnson, Garrick, Fielding and others were among regular patrons of the waters.

But it is with the residue of history more than history itself that we must be concerned, the picture and the atmosphere left by history. A few names remain. A large pond in a dell, now sadly disfigured by a dark Victorian waterfront, is called the Vale of Health Pond. And up from this part run streets, Well Walk and Flask Walk, this latter a relic of the flasks of Hampstead water that were bottled in the Flask Tavern and sent by coach to London. The Flask Tavern remains in name only. There are a few old shops, a commemoration fountain; but no Great Pump Room, no traces of the pleasure gardens and the balls. Only one of the Assembly rooms, a once-famed ‘Long Room’, stands encased in new red brick and revealed to the passer-by only as the quite Victorian ‘Weatherall House’. Yet—the leisurely atmosphere remains. There is a feeling of a slow parade about the configuration of the lanes

(Opposite) *The Beerbohm Tree Memorial overlooking Hampstead’s 18th-century Church Row; (below) tombstones in the macabre graveyard of St John’s*

Bill Brandt





Bill Brandt



John H. Stone



John H. Stone

and the heathside walks. The same tall elms and limes and thick chestnuts shade the walks and the walls each summer. Like a village long covered by the eroding sea, a place that once was and now has so definitely disappeared, it possesses a special enchantment. The absence of trace enhances its presence, its right to the spot. It becomes a secret, shared only in the atmosphere. More than ever do the newer buildings falsely interlope.

The outlying houses of this Wells district straggle onto the Heath, Hampstead's usual

claim to notoriety. From this south-eastern corner a chain of ponds extends across the grassland as far as the heights of Highgate. Between these, and in many other parts of the Heath, there run spring brooks that are nearly subterranean and whose course is marked by reeds and the bright green watercress. The sensation of this pond section is of bogs and lake and wet. Yet half a mile away the ground rises dry, and here the black silhouette of Caen Wood (now called Ken Wood) crowns the slope: within this thick



Will F. Taylor

(Opposite) *The Adam façade of Caen (Ken) Wood House, now a national trust, formerly the residence of the Earl of Mansfield; a rural bridge in Caen Wood, one of the last remnants of the primeval Middlesex forest; and Jack Straw's Castle—lying on one of the highest parts of the Heath, some 400 feet above Thames level. (Above) 'The Spaniard's' marches the road like the country inn it truly is. Cream-washed and set among trees, the old inn overlooks a road where Turpin used to ride; a wild heath road of gibbets and bad men*

wood lie the grounds and parkland of the Earl of Mansfield's residence, a huge whitish house with a pillared and pedimented Adam façade, isolated above its terraces, reigning serenely with the prospect of a summer palace. Caen Wood with its magnificent oak and beech trees is generally acknowledged to be one of the sole remnants of the primeval Middlesex forest.

Higher up, on heathland again but still among trees, lies the road upon which stands a tavern famous as "The Spaniard's". It is not known exactly how this name arose. There are records of a band of Spanish cavaliers who rescued a party of English ladies in distress. There are quieter memories of a Spanish ambassador living thereabouts. But no one quite knows. However, the rather sinister romance of the name matches the low-ceilinged, dark-panelled tavern. A country inn, its cream-washed brick lies close on the road. Directly opposite stands the old toll-house—a relic of the days when the road

was privately owned by the Bishops of London. So that between these two the road narrows, and everywhere there are trees, and it is the open country. Nothing of the town is in view. Yet beyond, like a fantasy, one knows that London closes in again, that there are miles of suburbs yet. It is incredible that these acres of wild heathland retain so faithfully their rustic character within the boundaries of a metropolis. It is the same heath that was notorious for its highwaymen, where Turpin and Duval scandalized the passing coaches; and about it there is still the remote and dangerous feeling of rolling, high, wind-swept heathland and ancient trees, a wild spot where bad men were possible.

Nearer to Hampstead itself stands Jack Straw's Castle, another well-known inn. It is said to have been named after a fortified moment during the march of the peasant rebels in 1371, when Jack Straw pitched his camp on the hill. Now it is a landmark for the Bank Holiday crowds, for near here the



Will F. Taylor

The character of old Hampstead—a green sea of rolling heath and asleep at its side the Georgian village among whose quietudes Keats found inspiration and Romney painted

Fair is pitched. But, apart from the Whitsuns and Easters and Augusts, there is about this place a perpetual atmosphere of holiday. Perhaps the reason is in the view, for from this high prospect all London can be seen lying blue below, like an endless sea again, with the dome of St Paul's a bell-buoy riding alone. The walks here are raised over four hundred feet above Thames level. Perhaps it is the air. Or perhaps the spirit of the Wells, of the old fashionable pleasure resort, still charges the atmosphere. For somehow or other the ties come off the collars and the collars open wide. People begin to walk slowly here, pacing down to the old-time rhythm of Hampstead, its most characteristic air of leisurely living, of a slow and quiet life that has outlived its time. This is a village where, a symptom of its anachronistic quality, a sedan chair was regularly used as late as 1853.

Of course, there are modern shops. Of course, the mansion flats have come. Of course, there is a fair spattering of angular Gothic revival. But still—a quality that grows rare in London—the early Georgian character

is paramount. Standing back in their gardens, leaning close over the steep sea-sick alleys, lying quiet along the wooded walks, beneath elms, chestnuts, limes, beeches—these quiet houses of such fine proportion still rest as they have rested for two hundred years. Queer thin chimneys rise behind brick walls, the delicate fluted pillars of a classic portico can just be seen through the branches of flowering syringa. It is in these houses, more than the Fair, that Hampstead resides. Here the hidden Georgian village, little known even to Londoners, sleeps on.



Eric Jarrett

An Intruder in Everyday Life

The Story of Applied Mathematics

by Professor E. G. R. TAYLOR, D.Sc.

"MAY 5, 1560. The Governors of the Muscovy Co. to their Agents in Moscow: Also we send you Nicholas Chancelour to remaine there, who is our apprentice for yeares; our mind is hee should be set about such business as he is most fit for: he hath been kept at writing schoole long; he hath his Algorisme, and hath understanding of keeping of bookes of reckonings."

* * *

The lad thus launched upon life in a scarcely-known land was one of two orphan boys left behind by Richard Chancellor, who, barely seven years earlier, had discovered the route to the White Sea and Archangel, thus putting England for the first time in history in direct communication with Russia.

Little Nicholas had been given the usual education for a business career; a clear handwriting, the first four rules of arithmetic, the Rule of Three ("his Algorisme") and some elementary book-keeping. While to the vast majority even such simple mathematics as this was then a sealed book, the rise of commerce from the 13th century onwards had created the need for it among merchants, and the oldest arithmetic books are simply Ready Reckoners for business men.

But commerce, at least in its Mediterranean cradle-land, implied ships, and ships implied navigators. For setting a ship's course by compass and chart, for checking her position by even the simplest observation of a star, something more than elementary arithmetic was required. The shipmaster must be familiar with the measurement of angles, in fact he must have some notions of geometry: he must be able to use his Calendar to find the age of the moon, and then, furnished with the figure for "the establishment of the port" which he is about to enter, he must be able to calculate the run of the tides. This modest equipment, however, no longer sufficed when the Portuguese seamen, under the inspiration of Prince Henry the Navigator, began to run down the African coast, preparatory to opening the sea-route to India. It became necessary to fix latitude by the sun, and hence to understand the solar declination which alters day by day—in fine, to master the elements of

astronomy. The greatest mathematicians of the day were called to the task of preparing suitable astronomical tables and simplifying the necessary instrumental observations and calculations down to the level at which they could be mastered and employed by the average pilot or ship-master. As a result, the latter part of the 15th century saw a primitive Nautical Almanack and Manual of Navigation in use among seamen.

But in all these matters England lagged far behind, for right down to the reign of Henry VII we were anything but a maritime people. True that the voyages of the foreign-born John and Sebastian Cabot from Bristol to a New-found-land made a stir for a year or two, but the discovery of America by Columbus went almost unnoticed. For several generations yet, such scanty geographical teaching as the average Englishman received from



From 'Science for the Citizen', by L. Hogben (Allen & Unwin)

The ancient astronomers mapped the heavens before earth measurement was thought of: since the stars guided man's destiny they must be minutely observed

grammar school or university was based on the out-of-date 'disc' maps which displayed Britain as "the utmost corner of the West" instead of as the island outpost ideally placed to become the intermediary between the Old World and the New.

* * *

The situation has its parallels today, now that we are on the eve of an exciting expansion of civil aviation. As now, it was a situation calling for global thinking, for thinking in terms of great circles as well as of rhumb lines, for a reassessment of geographical values, and of judgments about important and unimportant, accessible and inaccessible, parts of the globe. Then as now, there were far-seeing men who urged the authorities to initiate new enterprises, new ways of thought, above all a new education, both technical and cultural, which should take account of the mathematics of the globes, celestial and terrestrial alike, a mathematics fundamental to astronomy, navigation, meteorology, geography, and all these in their turn to world expansion.

By the time Henry VIII died, a powerful group, headed by the Duke of Northumberland, had embraced the project of discovering a short Arctic passage to Cathay, and furthermore had accepted the fact that mathematical theory was fundamental to technical progress. Not only, therefore, was old Sebastian Cabot invited back to England, but two brilliant young Cambridge scholars, Robert Recorde and John Dee, who had turned their minds from Greek to mathematics, were called into consultation, and to crown all a promising young Bristol seaman, Richard Chancellor, was brought to London and (with Dee's help) given the most up-to-date training in the science of navigation that Europe could provide in 1550. With Chancellor, mathematics at length intruded into the everyday life of the English seaman, and although the old 'rule-of-thumb' men continued to mock (Have you struck it? they used to shout on seeing the new-style pilot 'shoot the sun'), the teacher of Navigation, often a compass- or instrument-maker, or a retired sea-captain, became a familiar figure on Thames-side and in all the principal English ports.

After the merchants, the seamen, after the seamen the surveyors, after the surveyors the soldiers, after the soldiers the engineers: in quick succession whole classes of practical men found mathematics essential to their tasks, although the subject was still neglected in the schools, as being unnecessary to gentlemen, who left all technical tasks to inferiors. In vain did Peter Ramus in Paris publicly



The Great Age of Discovery made skilled navigation necessary. Every pilot had to learn not only to "shoot the sun" with his cross-staff, but to master the calculations necessary for finding his position

proclaim that mathematics, and especially geometry, was the foundation of technical (and therefore of material) progress and success, citing the pre-eminence of the Germans, who had lectures and textbooks in the vernacular at their disposal. In vain did John Dee, editing the first published English translation of Euclid, tell the same story, that leadership rested upon science, and science upon mathematics: in vain, even, did Sir Humphrey Gilbert plead for an Academy for the education of young noblemen which should break away from the University tradition of classical learning, and give a 'modern' type of education that would prepare men for the new technical age which could already be foreseen. Four hundred years have since elapsed, and education is still overwhelmingly literary and humanistic.

* * *

But to return to the surveyors. Earth measurement by similar triangles was almost certainly known to the learned few during the Middle Ages, but it had not been applied. The bailiff's or steward's rod, pole or perch had been sufficient to measure up all parcels of land to the degree of accuracy required. Land ownership was for long the prerogative of a very small class, including only the great nobles, the great religious houses; but with the rise of the new middle



(Left) *The Seaman's Astrolabe shown here was in fact made use of by men who were anything but angels.* (Right) *Why don't they fall off?—the plain man asked when Greek philosophers suggested that there were men at the Antipodes*

classes, and in England with the dissolution of the monasteries, changes of land-ownership were so numerous that during the 16th century a new professional group, the land surveyors, were called into existence. Again it fell to the lot of the mathematicians to devise the methods, design the instruments, and write the textbooks that these men of very average education and mentality could use. These new survey methods could be employed not only for drawing estate plans, but for making maps and nautical charts, and it is no mere accident that maps of the 16th century, such as Christopher Saxton's famous county maps of England and Wales, show such a remarkable advance over those of the 15th. The essence of surveying is the very accurate measurement of the base and two base angles of a triangle. A Flemish friend of John Dee's was the first to explain this method, while one of his English friends, Leonard Digges, designed a very early (perhaps the first) form of that essential surveying instrument, the theodolite. In a French book of 1550 there is a picture of a plane-table, so that we know quite definitely that in all its essentials, modern surveying dates from this period.

There were practising surveyors in almost every town by the 17th century, and those established in London and the home counties kept in close touch both with the leading mathematicians, in order to improve their

theory, and with the instrument-makers (most numerous in London), in order to improve their practice. It was the surveyors who immediately seized upon Lord Napier's wonderful invention of logarithms and put them to practical use to relieve themselves of long and tedious calculations, and it was the surveyors who first carried about with them sets of 'Napier's Bones' and primitive slide-rules which perform arithmetical operations mechanically. The story of the slide-rule well illustrates the freemasonry of learning which in those days linked the theorists, the technical men, and the practising mathematicians into an affectionate brotherhood with a common devotion and purpose—the introduction of mathematics into everyday life. It was the learned mathematical professors, Edmund Gunter and William Oughtred, who perceived how the logarithmic principle could be applied to a foot-rule: it was through their personal friendship with the most skilled mathematical instrument-makers, Elias Allen (whose shop was by St Dunstan's, Strand) and Ralph Greatorex, that exquisitely engraved examples of the rules were put upon the market, and it was through surveyors such as William Leybourne, 'loving friend' of Oughtred's favourite pupil (for he was of a younger generation than the master) that the rules not only came into daily use, but their use was taught to all who desired



From 'Tudor Geography', by E. G. R. Taylor (Methuen)

the principles of the modern plain-table sight-rule and theodolite, and any surveyor will recognize them from these illustrations. The classical tradition rather than current practice dictated the costume of the exponent on the extreme left of the picture on the right



From 'Tudor Geography', by E. G. R. Taylor (Methuen)

Large-scale changes of property ownership called for a new class of surveyors. Their art was founded upon Euclid's Elements. Their early instruments, crude though they were, embodied the principles of the modern plain-table sight-rule and theodolite, and any surveyor will recognize them from these illustrations. The classical tradition rather than current practice dictated the costume of the exponent on the extreme left of the picture on the right

to learn. Employment as a surveyor was irregular, and most of these men were also professional teachers of applied mathematics in all its branches, since the universities and grammar schools still turned their backs upon 'useful' knowledge.

William Leybourne, by apprenticeship a printer, by choice a self-taught mathematician out of the books which came to his press, owed his chance to follow his bent to the Civil War. The innumerable forfeitures of land by the Cavaliers created a great demand for surveyors, and helped by the mathematical

friends whom his passion for the subject had won for him, Leybourne was soon successfully launched. Fifteen years later he was assisting in the survey of London after the Great Fire, and when too old for such field-work he still continued to teach, and to turn out a stream of popular textbooks covering every branch of his mathematical curriculum.

This curriculum, by Leybourne's day, had long become stereotyped. It included not only the mathematics of surveying and navigation (with the use of the necessary instruments), but the elements of quantity survey-

ing, gauging and the measurement of solids, the mathematical aspects of gunnery and fortifications, the geometry of dialling and the construction of sun-dials, besides the use of the globes, both celestial and terrestrial. All of this teaching, as the generations passed, gradually became divorced from reality. We laugh at the young misses in Jane Austen who scorned their little provincial cousin Fanny because she had never been taught how to rectify the globe, but the introduction of the globe into every study and schoolroom had marked the revolution in ideas consequent upon the Great Discoveries, and the moment has come in our rapidly shrinking world to turn away from Mercator's Projection of the British Empire in favour of the globe once more. As to quantity surveying, this was a very necessary art with all London to be rebuilt, and we should realize that the questions in our arithmetic books about the numbers of bricks that so many men can lay, the cost of glazing such-and-such windows, of papering such-and-such walls, have come straight down to us from William Leybourne's note-books, and with those about labourers mowing hay and cutting corn, represent practical problems that men had need to solve in real life.

* * * *

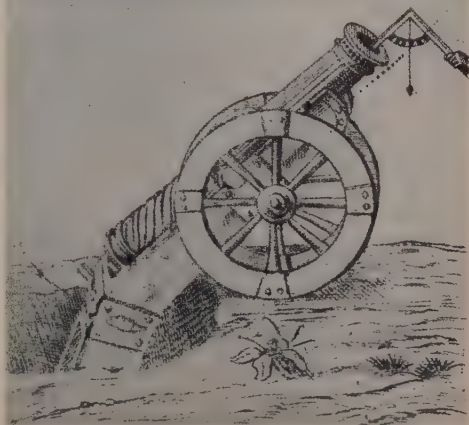
Military mathematics, again, did not arise by chance. The invention of cannon in the 15th century set a twofold problem, of attack and of defence. The old medieval town and castle walls were useless against artillery fire, and a whole new science of fortification, demanding a new professional man, the mathematically trained military engineer, came into being. As to the cannon themselves, how far was the muzzle to be elevated, and what charge of powder was to be put behind the ball in order to hit a target at a given distance? And how was this distance to be known, since the gunner could not pace out the line to the enemy's wall, or camp, or warship? The problem of distance was, of course, answerable in the same terms as in surveying a tract of land at a distance—by the measurement of a base line and two base angles of a triangle, the inaccessible point lying at its vertex. The soldier, then, must learn the elements of survey, as indeed he must, besides, for throwing up fortifications. The problem of the path in flight of the cannon-ball, or the projectile from a siege mortar, was much more difficult. The first to attack it seriously was a famous Italian mathematician, Nicholas Tartaglia, who flourished early in the 16th century. He threw his findings into the form of a textbook



From 'Science for the Citizen', by L. Hogben (Allen & Unwin)

Military mathematics was merely of academic interest to the English islander, but it was vital to the French and the Germans, to whose writers we turn for such illustrations as these two of the problems of attack and defence. The men in the top picture are setting out the ramparts and fosses of regular fortifications

From 'Mathematics for the Million', by L. Hogben (Allen & Unwin)



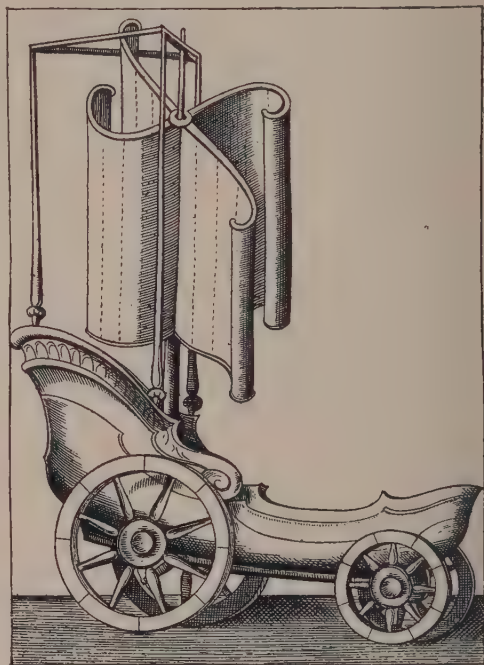
for gunners, which he dedicated to our own King Henry VIII, a monarch whose great intellectual gifts we are apt to overlook, although they were recognized by his contemporaries.

A generation later, one of Queen Elizabeth's master-gunners, William Bourne of Gravesend, published Tartaglia in English as *The Art of Shooting in Great Ordnance*, just as he had published an English version of a standard Spanish work on navigation, and an English epitome of continental surveying practice. For in spite of the shining examples of a Richard Chancellor, of a Robert Recorde, of a John Dee, England continued to lag behind in mathematics and therefore in technics. Were more pilots wanted, we must borrow from Portugal; was mining to be undertaken at Queen Elizabeth's dictate, then experts must be brought in from Germany; did we wish to consult a globe, then we must import it from Flanders; to drain the Fens, we must turn to the skilful Dutch. Only very gradually did Recorde's mathematical textbooks in the English tongue, and Dee's translation of Euclid, bear fruit; but by the close of Elizabeth's reign the current of English mathematical and scientific thought began to flow more steadily and deeply, presently to produce a Robert Hook, a John Flamsteed, an Edmund Halley, an Isaac Newton. To produce also those humbler Professors, Lovers and Well-wishers of the Mathematics, for so such men as William Leybourne termed themselves, whose task was to interpret the greater men to youths about to embark upon a mechanical or technical career.

The incorporation of the Royal Society, of which four distinguished Fellows have just been named, was due to Charles II, but its gestation period goes back through the Interregnum to the ferment of the Civil War. And if we probe yet further, we can note the impact of the tremendous discoveries in astronomy and mechanics of Galileo, and of the tremendous tragedy that struck him down upon young ardent spirits such as John Wilkins, then at Oxford. Now John Wilkins was to become a founder of the Society, for he wished to bring to earth his vision of science as order, order as mathematics. An obvious practical step was to make the common man free of mathematical principles, and to that end Wilkins's *New World in the Moon*, which posed the Copernican doctrine, and his *Mathematical Magic*, which dealt for

the first time in English with mechanics, were written and published. Yet he had to apologize to his academic and gentlemanly friends: "It is related of *Heraclitus* [he wrote] that when his Scholars had found him in a tradesmans shop, whither they were ashamed to enter, he told them . . . that the gods were as well conversant in such places as in others; intimating that a divine power and wisdom might be discerned in those common arts which are so much despised. And though the manuell exercise and practice of them be esteemed ignoble, yet the study of their generall causes and principles cannot be prejudicall to any other (though the most sacred) profession."

John Wilkins bade his young readers (for he

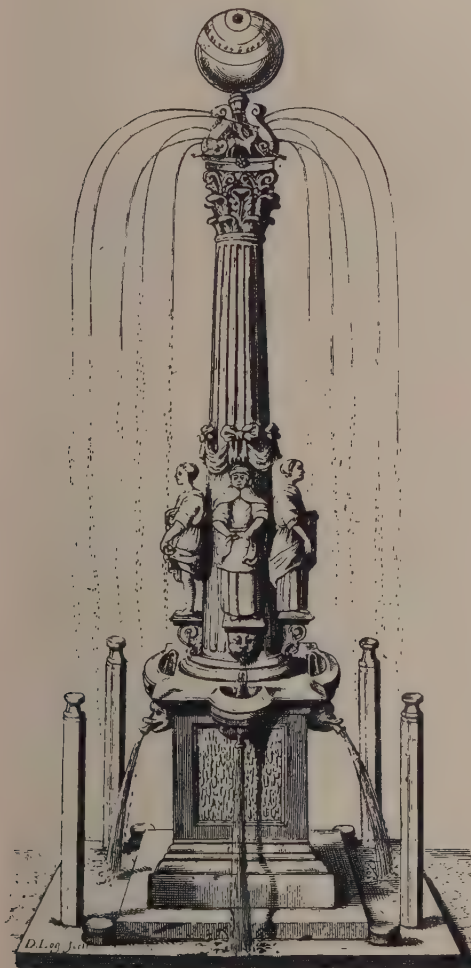


The mathematicians of today can peer into the future with greater sureness than the ancient astronomers. But they must have the help of the technicians. The steam-engine was not invented when this mechanically propelled carriage (above) was designed. (Opposite) Before clocks and watches became common the sun-dial was no mere garden ornament but a necessity. This one was erected in Leadenhall in the reign of Charles II

wrote for youth) look forward to submarines, to flying machines, to horseless carriages, to work of all sorts performed chemically or mechanically in lieu of by muscular exertion, but he had only the barest glimpse of the terrific mechanical power of the steam engine. That discovery was to come twenty-five years after his death, when Savory's first engine was patented and 'heat' had to take its place in the young engineer's study programme.

* * *

By the date of the Restoration we had risen to be foremost among seafaring people, and so most keenly aware of the need to invent an accurate timepiece, by means of which the so far intractable problem of longitude could be



solved. Robert Hook, whose architectural contributions to the rebuilding of London have received such belated recognition, was among those who made substantial contributions to the designing of improved watches and clocks, and hence to rendering obsolete that instruction in Dialling which was part of the mathematical teacher's stock in trade. The demand for ever more elaborate sundials in the 17th century was in part a fashionable craze, but only in part. It reflected the increasing importance of town as opposed to country life, for the countryman needed no artificial timekeeper. It reflected also the stricter tempo of urban life: time was a matter of moment, appointments must be kept. It was a pleasant diversion, too, to invent new forms of dial, just as some mathematicians today delight in inventing new projections of the globe. Nor, as it chanced, was the lore of garden sun-dials without its impact upon scientific progress. It was in testing the King's dial in Whitehall Gardens with his magnetic compass that the mathematician Gellibrand made the discovery that the magnetic variation had altered since the dial had been erected, and it was to establish the rate of this 'variation of the variation', all-important for seamen and all users of maps, that Robert Hook was bidden time and again by the Royal Society to repair to the dial, a compass-maker in attendance.

* * *

Meanwhile a greater genius even than Hook was at work, pondering, not upon particular problems of time, or architecture, or magnetism, but upon the great general problem of a universe in harmonious motion. Isaac Newton was born in the year that Galileo died, and it was Galileo's problem that Newton solved. John Dee had urged upon his contemporaries the importance of geometry in everyday life. But geometry treats only of points at rest—it is static. Newton's Laws of Motion are basic to the mathematics of a new Machine Age, in which all is dynamic. Wider and wider fields of human activity, of human environment, are invaded by mathematics, so that some men equate the mathematical principle with the divine. God is a great Geometer, said Isaac Barrow in the 17th century: God is an arch-Mathematician, says Eddington in the 20th. Yet to the great majority of us, mathematics is still an intruder upon everyday life, and intruders are unwelcome. We turn our backs. Mathematics are 'hard'.

The Gambia

by SIR RICHMOND PALMER, K.C.M.G., C.B.E.

The British Crown Colony described here by Sir Richmond Palmer, who was its Governor and Commander-in-Chief from 1930-33, has a long history, though since its discovery by the Portuguese and early settlement by the English in the 16th century it has not been the scene of any very famous episodes or important events. The new alignment of continents and colonies that the development of air communications will bring in the post-war world will, however, give an altogether greater importance to West Africa as a jumping-off point for traffic to the Americas

THE Gambia Colony, which, next to Newfoundland, is our oldest colony, now comprises merely the narrow ribbon river valley of the Gambia River for 300 miles inland, with some additional areas to the north and south of its mouth, and its capital the town of Bathurst, situated on a large sandbank and created and developed entirely by ourselves. Above the upper reaches of the Gambia River, in Mauretania and the regions known as Futa Toro and Futa Jallon, is the home and point of dispersal of a great African people—the Fulbé—whose own chronicles and traditions connect their rise and development with the era of Arab penetration of the west (A.D. 660) on the one hand, and with certain Jewish peoples in Mauretania and Senegambia on the other. There must be some foundation for this latter tradition: it appears to connect with the following facts.

The ancient gold trade to Guinea (A.D. 600-1200) from Morocco was largely in the hands of Jews, who were also the early

cartographers of Majorca.

The early Portuguese Jewish settlements or trading station in Mauretania (1415-80) and Senegambia such as Arguin, were intended to attract this trade from Wadan and the Guinea region.

Subsequently towards the end of the 15th century when the Jews were expelled from Spain and Portugal, large numbers of them were sent out to colonize such places as the Gambia Valley, São Thomé, etc., so that there evolved in the Gambia and elsewhere a large half-breed half-Jewish population called "Portingals".

But even in those days there were scruples about the moral aspect of colonization, for in 1481 our own King Edward IV actually petitioned the Pope for leave for his mariners to make voyages to Africa "as it is advantageous to the Christian Religion that wealth and other things, precious for their natural excellence, should be drawn into its power from the hands of the infidels". The real



John Bingham

The Gambia Colony now comprises merely the narrow ribbon river valley of the Gambia River

point of course was not whether it should be drawn but who should draw it: *i.e.* which of their Christian Majesties, Portugal, Spain or England. In the long run opposition and objection to the process came not so much from any of the African tribes as such, as from the Islamic African world and its political centres in the Upper Niger, and to the north, in the Sahara and North Africa.

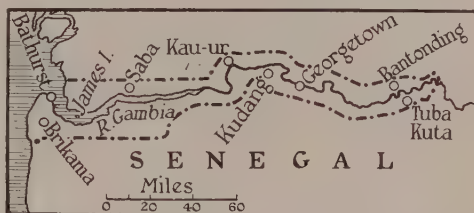
But another hundred years of Portuguese and Spanish exploration and enterprise passed, before on May 3, 1588, Queen Elizabeth granted to Antony Dassell, a Barbary merchant of London, Exeter and Barnstaple, an exclusive licence to trade in Senegal and the Gambia. Almost another hundred passed before the small island, called St Andrew's or James Island, about 25 miles up the Gambia River—which had been acquired by the Duke of Courland—was, when the Duke was captured by the Swedes in 1658, declared in effect a *res nullius*, and in 1661 was occupied by "The Royal Adventurers of England trading into Africa".

From 1661 until the close of the 18th century, when it was given up in favour of Bathurst at the mouth of the river, St Andrew's, or James Island, became the home of British trade and enterprise in the Gambia, and was during the period 1765–83, when we were in occupation of Senegal, our chief base in Senegambia.

Taken and retaken by or from the French on various occasions, it was from time to time restored and rearmed with cannon till it was finally abandoned as useless. Even today

ruined fortifications indicate its former greatness, and bear testimony to the courage and endurance of garrisons who, confined on an island a few hundred yards long and less than a hundred wide, with no water save on the mainland, in a lethal climate, fought and died by the score, of malaria and yellow fever.

But the value of the Gambia in the 15th century, when it was first colonized by the



Stanford, London



W. F. Miles

Ruined fort on James Island, seen from the air: the earliest point of settlement of the English

Portuguese, was not so much as a trading station as that it was the starting point on the best following-trade-wind route across the Atlantic to America. Thus during the Civil War in England it was used by Prince Rupert to waylay traffic to the New World and in later times as a convenient centre from which to control the Slave Trade. Though since 1783 the Gambia has been merely a small fraction of a Senegal which in general has been under French rule and authority there has rarely been friction. French and British have traded side by side, and Public Holidays have included the French and the British holidays. The staple trade of the Gambia—ground-nuts—have also been the staple trade of French Dakar and Casamance.

But today the Gambia has acquired the same kind of importance it had in the days of Queen Elizabeth. It is an important air station on the coast at the point where Africa

is nearest to South America, and also on the probable air routes of the Sudan from the west coast of Africa to the West Indies, North America and Canada.

Shortly before the war the Germans established an air service from the Gambia, refuelling in mid-Atlantic, to Natal in Brazil. The French, on the other hand, had a fast motor-boat service from Dakar to Brazil. The Gambia is now required both for our Commonwealth and world air communications—this Gambia which we have occupied and colonized since 1588, and which has been more or less under European Portuguese and Jewish occupation since 1445.

In status the Gambia is still, as it always has been, a colony with its own Legislative Council and local institutions, but both in sentiment and interest it is as much part of the King's Dominions as, for instance, the Isle of Man, and as loyal.

The Capital

Bathurst, founded in 1816 and named after the then Secretary of State for the Colonies, is a well-shaded town built on St Mary's Island only about 14 feet above the level of the river and connected with the banks by a bridge. (Left) McCarthy Square: (below) the tower of the Secretariat building framed in leaves. The ruddy sandstone of many of the houses is set off by the thick foliage of the bombax and other trees

John Bingham





W. F. Miles

The River

The Gambia stream rises, like the Senegal and Niger, in the Futa Jallon highlands. Its length is over 1000 miles, though as the crow flies from source to estuary not more than 300. It is navigable for 300 miles from the Atlantic. The British frontier is a little south of Yarbateuda. In character the Gambia is a broad placid stream running for the most part through park-like country and, especially in its lower reaches, very winding



G. M. Hall

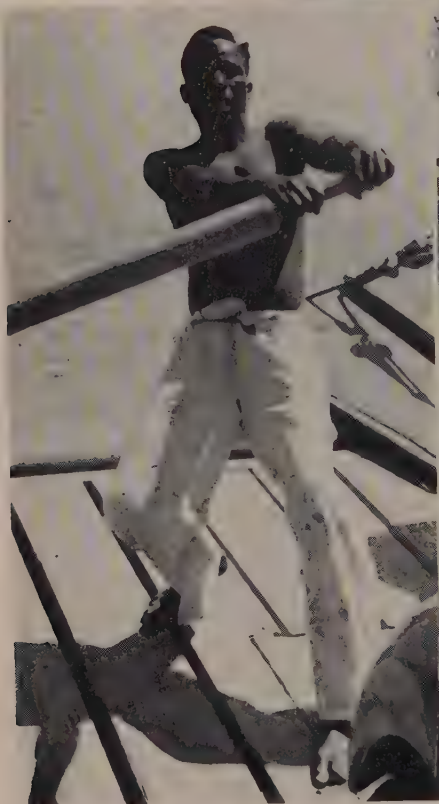


John Bingham

The Ferry

Although the width of the Gambia River varies with the seasons, near the sea it is several miles wide.

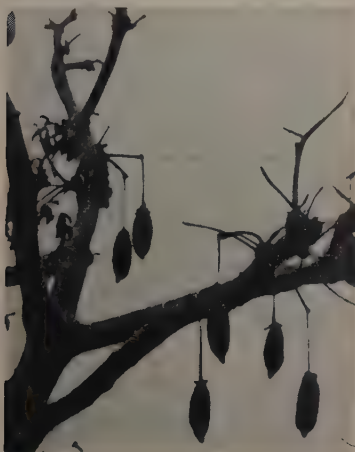
The whole life of the colony is conditioned by 'Ol' Man River'; the river-steamers and ferries play the rôle that cars, taxis and trains do with us





Trees

(Above) Cotton trees. (Right) Boababs and (below) their fruit: natives sometimes eat it before the rains when food supplies have run low. The lower reaches of the river are fringed by the usual West African mangrove swamps



W. F. Miles

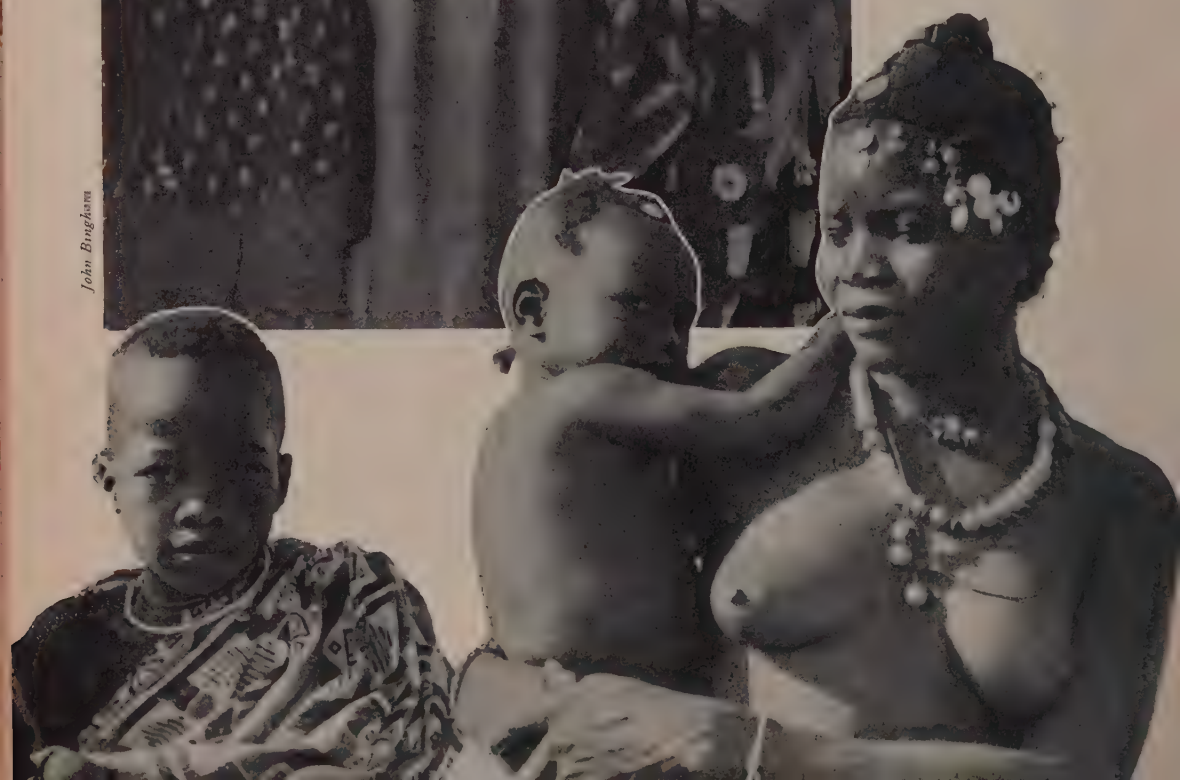
John Lingham

The People

(Left) Griots or Entertainers of Skuta Sisi, Chief of Kung. (Below) A family group from the south bank of the Gambia. (Opposite, top) A group of 'Moors' reputed to come from Mauritania. They are, racially, a mixture of Berber and Negro; (bottom) Wolof girl-dancers from Bathurst. The population of Gambia is mixed, but the two more advanced types are the Fulbé (met with over a large—



John Bingham



—area from Senegal to Darfur in the Sudan) and the Mandé or Mandingos. The Fulbé are a brownish-skinned people, peaceful, intelligent and devout Moslems, who spread from Mauretania to the Upper Niger and the West Coast in comparatively recent times. The Mandingos were a more ancient people. Once a caste of Sudanese conquerors, they have become merchants



John Bingham



John Langman.



J. N. Malson

The Village

(Above) Characteristic village with wattle fences and baobab trees. (Left) A Mandingo woman—'Mandingos' now form rather a linguistic group than a people—pounding cereal. Rice and millet are the staple foods in the Gambia. These village scenes were taken a good way upstream towards the French frontier and give an idea of the clean and spacious small settlements that are dotted all along the river banks. Every now and again is a large village with European huts, stores, resthouses and dispensaries

Entertainment—

Wollof dancers at a village festival near Bathurst; the 'dancing' is mostly posturing and handclapping although from time to time a solo dancer does a West African edition of a rumba to the accompaniment of a small tom-tom vigorously beaten. All the Gambia people are fond of music and dance; indeed it was Gambia (and other places on the West Coast) that furnished the great bulk of those who became American negroes and gave us jazz, blues and rumbas, congas and syncopation

—and Craftsmanship

The Gambian peoples are cunning silversmiths and workers in metal. Although the colony itself does not produce any gold, in olden times gold dust from the Futa Jallon highlands was one of the staple exports of Senegambia and it can still be purchased in small quantities. 'Jack' is the best-known silversmith of Bathurst: below is one of his young assistants at his work-table dangling one of his own silver chains



John Bingham



John Bingham

Food—

(Left) Preparation for Gambia, oyster stew. Lobsters and fish of many kinds are found in the sea off the Gambia shores, in the estuary and below it; the lobsters were formerly exported in large quantities to Bordeaux. The oyster of the estuary—the Gambia River is salt for many miles—is excellent, and if given the proper materials the Gambia people can as easily be trained as good cooks as their cousins in the U.S.A.

(Below) The colour-



J. N. Matson

ful scene at market, the onions and tomatoes in the stalls, the multi-coloured turbans and dresses of the women. Note the kerchief bow of the woman on the right reminding one of Martinique and the West Indies. Although the staple food of the people is cereals, there is an abundance of fish,—

M. P. L. Wall



—and Trade

—and the keeping of bees, to produce honey and beeswax (one of the principal exports) is widespread. Rubber, palm-kernels, rice, cotton, millet, hides, dried fish and the brightly coloured 'pagnes' or clothes which are woven by the women in all the villages are among the products of the country, but the main article of exportation is ground-nuts. These are the nuts from which what the French call 'huile d'arachide' is pressed

and ground-nut oil, either under its own name or masquerading as olive oil, is sold widely in Europe and elsewhere. (Right) Screening the nuts and dumping them from baskets onto the high heaps where they dry before being packed. (Below) Bales of ground-nuts being loaded onto the river steamer. The warehouse is in the background



A. J. Brooks

John Bingham



The City of Rats

by GLYNN GRATTAN

BEFORE the war restrictions imposed upon visitors to Persia limited their numbers and directed their movements to beauty spots and famous cities. But after the British and Russian occupation of the country in 1941 officers and men of our forces often found themselves travelling through wild mountains and fertile valleys which must surely be accounted among the most beautiful scenery in the world.

One day in the early autumn of 1942 I was to move by truck from Ahwaz to the new road running north from Andimishk through the centre of Persia. There had been some flooding of irrigation water on the direct route to the west of the Trans-Persian railway and I was forced to take the track along the dusty foothills to the east. At first it follows the pipe-line, running from the Anglo-Iranian oil-fields to the great refinery at Abadan. The northern sector of the road bears away to the north-east towards Dizful, through mile after mile of featureless country. That it was hot goes without saying—on few days at this season is the maximum temperature less than 120° F. There had been a dust storm earlier in the morning and a fine haze still hung over the country, limiting visibility to one or two miles.

Following the map as we neared Shushtar about midday, I had expected to find some shade near the Karun river which divides close above the town. I had planned to spend a couple of hours resting there before completing the journey. Approached from the south-east, Shushtar looked like any other town in southern Persia—a rambling collection of mud-brick houses, fringed by the squalid shacks and tents of its nomadic visitors. A steep rise along a cobbled street brought us abruptly to an open space, and here we drew up in astonishment at the sight before us. The beauty of the scene was in startling contrast to its drab surroundings. Colour and form were there, mellowed by countless ages of wind and water, and by the romance of a long and eventful history.

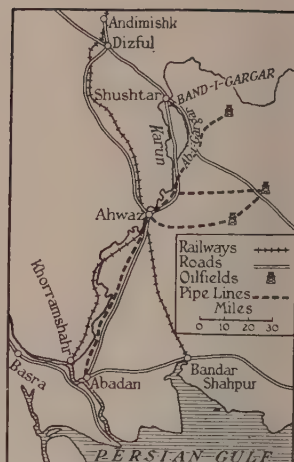
The branch of the Karun river which flows through Shushtar itself is called the Ab-i-Gargar. This stream is reputed to be arti-

ficial. It once formed the eastern boundary of the town and was a protection from invaders, though—since those days the buildings have spread beyond.

To our immediate right rose up the bare face of the Band-i-Gargar, a dam some sixty or seventy feet in height, which controls the flow of the river. Immediately before us raced the main stream while below lay a great basin of turquoise-coloured water, fed by foaming cascades which poured down from the surrounding cliffs. Across the centre of the basin stretched a great tongue of rock connected to the mainland by a narrow corridor at either end. Through and over this rushed the waters which had been diverted at the dam, for the whole of the soft rock had been honeycombed by man to turn the water to his own use. Around this basin on all sides rose ochre-coloured cliffs, topped by buildings to their very brink. To our left the river had carved a deep, narrow channel, fed here and there by further cascades and lined by vivid green foliage out of which stood tall palms. Permeating all was the ceaseless music of the waters.

Leaving the truck, we went to the brink of the basin. Before us were the swirling waters, while on a ledge fifty feet below, a pool fed by a deep blue runnel had been cut out of the rock. In it swam three girls who looked just like mermaids. Unabashed by our presence, they lay naked in the cool water, their black hair trailing around them and their fair skin gleaming under the surface. They were chattering and laughing among themselves, and watching us, for to them we must have been an unusual sight—though scarcely as pleasing a one as they were to us. As we turned to leave they smiled and waved us on our way.

We climbed along the cliff edge to a point below the top of the dam, where we dis-



Stanford, London



Photographs by the author

(Above) In Shushtar, the 'City of Rats'. "Below lay a great basin of turquoise-coloured water, fed by foaming cascades which poured down from the surrounding cliffs." (Below) The outflow from the basin: swirling waters, whose ceaseless music was all-pervading



covered some young men performing remarkable feats in the water. They were fine swimmers, and their bronzed bodies were lithe and strong from hours spent in the torrent. They would dive or jump time and again from the towering rock at the immediate edge of the basin. Their most daring trick was to plunge headlong into the main inflow of the basin itself as it descended at the side of the dam. At once they were lost to view, carried beneath the surface into the whirlpool below, to be thrown up again at the outer edge.

Moving on to inspect the dam, we were invited to follow a young fellow who became our guide. Crossing the dam by the roadway along the top, we passed a miniature mosque perched on the solid rock. The characteristic blue and gold mosaic of its minarets glittered in the sunlight, while, in striking contrast, a crimson-robed figure paced slowly round the balcony below.

Descending a steep track, we crossed a narrow path onto the tongue of rock which we had seen from above and disappeared into a labyrinth of passages in its foundations. It was a minute or two before our eyes became accustomed to the dim light. It was cool there, and the air was filled with the gurgle of a hundred water channels, the object of which for the first time we now perceived. We were taken into a wide rock chamber, almost completely filled by a great spinning millstone ten feet in diameter. Below the floor passed water which afterwards emerged to form one of the cascades we had seen pouring into the basin. Above the millstone was fixed a log from a palm tree, cut down its centre and hollowed out. The trough thus formed was piled with grain—maize for the most part—which trickled steadily through a small hole onto the centre of the revolving stone, whence it found its way down to the bed of the mill-table. At one side sat an old man, among the sacks of grain waiting to be ground. He was stripped except for a cloth round his waist and a small white skull-cap on his head. He bade us welcome, and with pride ran the grain

through his fingers, singling out the different seeds to show us. We moved on through the labyrinth from which the town in its dim past received the name 'The City of Rats'. As we walked along the low corridors of rock, past holes leading out to the sunlight, the name seemed well chosen. Numberless people lived in the strange rock chambers, and we saw them cooking their food, sleeping and eating there, while a small band of children scampered ahead.

At last we emerged through an opening near the level of the waters, and climbed by steps cut in the rock face back to the 'roof' of the dwellings. Crossing to the further bank, we mounted a long stairway to the highest point of the town which from here presented a different aspect. Across a wide expanse of flat mud roofs stood the great fortress of Salasil. Beyond it could be seen the vast bridge and dam known as Valerian's Bridge. The Sasanian king, Shapur, in his triumph over the Roman arms at the Syrian town of Edessa in A.D. 260, had captured the emperor Valerian and a host of his soldiers. The captives were set to labour on the construction of this mighty dam surmounted by a bridge of forty arches and six hundred yards in length, which was to serve both as a means of communication over the Karun river and as a source of water supply for the irrigation of the fertile lands surrounding the town. For over 1600 years this bridge and dam had stood intact as a token of the skill and labour of its builders, until in 1885 a great flood had carried away five of its arches. It was these Romans who also built the Band-i-Gargar.

Dropping down from the summit through a maze of cobbled alleys, we regained the narrow road which cuts through the town. Here the truck was waiting, and reluctantly we made our way to the car ferry over the Karun. Paddling slowly across the river, we passed close below Valerian's Bridge, over which for so many centuries the kings and the poets, the soldiers and the merchants of Persia had trodden in pride.

Fog

by GEORGE H. T. KIMBLE



OF the many kinds of bad weather that at times afflict these islands, none gives so much trouble as fog. Fog still grounds air armadas, immobilizes fleets and vies with the black-out in raising road accident rates—all because a few hundred tons of water get distributed in the wrong place.

Cloud and fog are both due to the cooling of the atmosphere to a temperature below its dew-point (the temperature at which the air becomes saturated); that is, they are really suspended forms of dew or hoar frost. The only difference between them is that, whereas fog consists of water droplets or ice particles condensed from, and floating in, the air near the surface, cloud consists of water droplets or ice particles condensed from, or floating in, the air well above the surface.

The density of a fog is determined by the size and number of the water particles. A dense sea fog will contain in one cubic inch anything up to 20,000 particles, each of which is probably less than $\frac{1}{250,000}$ of an inch in diameter. The trouble about them is that almost nothing can be done to make them coalesce and so clear the air: on the contrary, they tend to repel each other, almost as if they were charged with electricity.

There are two main types of fog: those produced by evaporation of warm water into cold air, and those produced by cooling of warm air in contact with a cold surface.

Fogs of the first type only form when cold air streams over water at least 20°–25° F. warmer, or when warm rain falls through

cold air. When you fill your bath with hot water on a winter's day you reproduce the former state of affairs and get what, in nature, is known as 'steaming fog' or 'sea smoke'. The latter state of affairs exists sometimes in a depression when warm saturated air overruns, or is undercut by, colder air.

Fogs due to cooling also form in two ways: either as a result of warm air moving over a cold surface, that is by advection, or as a result of heat being emitted from the earth's surface into space, that is by radiation.

With the exception of sea smoke which only occurs near pack-ice or where warm ocean currents flow past very cold lands, for instance, in N.W. Russia in winter, sea fogs are as a rule caused by warm, moist air (often of tropical origin) drifting over the cool seas of middle and high latitudes. These fogs are most frequent in early summer, when the contrast between air and sea temperature is greatest. In the autumn the sea is at its warmest; consequently the air has to be very warm before it stands a chance of cooling down to its dew-point and, so, of precipitating its moisture in the form of fog. Almost the only air capable of doing this has come up from low latitudes, say, south of the Azores, at a pretty good speed and then stagnated over our western approaches.

Advectional fog is thus uncommon over the sea in autumn, but by no means uncommon over the land. For what the sea cannot do by reason of its storage of summer-time warmth, the faster-cooling land can easily

accomplish—especially at night. In fact you can be almost sure that when a stream of ex-tropical air stagnates (that is, slows down to a travelling speed of less than 10–15 miles per hour) over these islands, night and early morning visibility will be poor, even if it is not poor enough to be called fog. (Officially it is correct to speak of fog only when the range of visibility falls below one kilometre—1100 yards roughly; when the range lies between one and two kilometres you should speak of ‘mist’ or ‘haze’, according to whether it is produced by condensed or water particles or by solid matter such as dust or smoke.)

But radiation rather than advection gives us most of our autumn and winter fogs.

As the sea surface does not cool appreciably by night, the formation of radiation fog is purely a land phenomenon; there is, of course, nothing to prevent it, once it has formed, from drifting out to sea. Although radiation fog occasionally occurs in unsaturated air, nine times out of ten it will not form unless the air has cooled to below its dew-point. But fog will not necessarily form even then. There may be too much breeze, or too little. The air may be too ‘clean’, deficient in those microscopic solid particles which act as carriers for the water droplets.

Then how does this sort of fog form? Weather experts would give quite a lot to possess the complete answer to this question. In the absence of it, they usually content themselves with the assertion that “the cooling of the ground is communicated to the air in contact with it: that it spreads upwards, partly by turbulent mixing and partly by radiation between the ground and the successive layers of the air above”. Which does not take us very far, as we can see when we consider what happens on a windless night. Because there is then no turbulence in the atmosphere, the cooling cannot be ‘communicated’ upwards, and the ground may easily become 10°–15° F. colder than the air a few feet above. Now just as condensation of water may take place very freely on the cold walls of a room, when the air is humid, without the moisture in the air being visible, so on a calm night there may be a heavy fall of dew (or hoar frost) if the temperature is low enough, but no fog.

Or again, suppose the night is windy; the stronger the wind, the deeper is the layer affected by turbulence. With wind velocities of more than 15–20 miles an hour this motion becomes so extensive and rapid that the total duration of contact between any portion of

A summer-time fog bank off the Pembrokeshire coast: thanks to the higher temperature of the land at that season, the fog ‘dried out’ as soon as it reached the heated sands and cliffs

G. H. T. Kimble



the warm air and the cool surface is likely to be so brief that only very little cooling can take place near the surface: consequently no fog can be formed. If the dew-point is reached at all, it will not be at ground level, but at, say, 1000 to 1500 feet above, for turbulence produces a falling off of temperature with height (known technically as the 'lapse rate'), in the layer of air affected by it, approximating to 5.4° F. per 1000 ft. This means that the lowest temperatures are not at the surface, but near the upper limit of the turbulent layer; which, according to the wind speed and the configuration of the land, may be anything up to 1500 feet above the surface. If, therefore, there is any deposit of water droplets, it will take the form of cloud, and not of fog.

Somewhere in between these extremes there is an intermediate state in which the moisture supply, the rate of cooling and the degree of turbulence are so balanced as to ensure that condensation of the water vapour shall take place *near* the ground in the form of mist or fog. It is because this 'balance of forces' is so finely adjusted that radiation fog is so irregular in its habits and so difficult to forecast.

What, at first sight, could be more 'irregular'

than the fact that ground fogs are often at their worst, not during the night when the air temperature is lowest, but shortly after sunrise when the ground and the layer of air immediately above it are beginning to gain more heat than they are losing by radiation? Indeed, quite often when no fog forms during the night at all, it begins to do so as soon as the sun is up. Near towns and big industrial areas soot and other compounds partial to moisture which are discharged into the saturated air from innumerable fires may have something to do with this. A more likely explanation would seem to be that after sunrise there is an increase of turbulence and the cold air near the surface is mixed with warmer air above it: as a result of this mixing, fog is formed. But beyond a certain point mixing, or turbulence, makes for the dispersal of fog rather than its growth, for it starts to bring down drier air from aloft which swallows up the surplus water as invisible water vapour.

Although they can occur at any time of year when the air is moist and the nights are cool, clear and calm, ground fogs are most likely to persist in the winter months. In summer-time turbulence and convection, making an early start on the sunny hillsides above the shrouded valleys, usually succeed

Evening mists form most easily over low-lying ground, but the air needs to be moist. For this reason they generally appear earlier over a water than over a land surface

G. H. T. Kimble



in dispersing the fog within an hour or so of sunrise. By late autumn the sun has lost much of its strength; consequently the heating of the ground is slower. This means that, even in the most favourable circumstances, the time taken for the fog to clear gets longer and longer. Moreover, the nights are long in late autumn, which means that the air has more chance of cooling to its dew-point and so of building up a substantial fog layer. If this fog layer is deep, the chances of its clearing are not great, for fog is a poor receiver of the sun's rays; it does not convert the incoming 'short-wave' radiation at all effectively into 'long-wave' radiation which is the source of our terrestrial warmth. Instead, it reflects most of the short waves back into space without utilizing them; few manage to reach the earth's surface where they can be used to heat up the water droplets in the fog and so make them vanish into thin air.

You might think that our worst ground fogs would occur round the shortest days of winter. In fact autumn is more liable to them, partly, perhaps, because the winds are generally lighter at that season, and partly because the atmosphere has a somewhat greater humidity then, for since the sea—the source of all the moisture—is warmest in the autumn 'maritime' air is likely to have a higher water-content than at other seasons.

With advection making for maximum fogginess near the coasts, and radiation making for it inland, we are not surprised that some places are foggier than others, and that they are foggier at different times of the year. The foggiest parts of the British Isles

are the London area, the East Midlands, the Lancashire and Yorkshire industrial centres and the Central Lowlands of Scotland. All of these have an average of more than 50 foggy days a year. At the other extreme, the Western Isles of Scotland and the west and north coasts of Ireland have less than 10 foggy days on the average. Generally speaking the frequency of fog increases in these islands with distance from the sea (especially from the Atlantic), and with approach to large manufacturing centres and cities. But there may be striking differences between places equally far from the sea and large cities. For instance, whereas there were 50 morning fogs at Rickmansworth in 1935, at Rothamsted a few miles away there were only 7. The explanation here seems to be that Rickmansworth lies in a valley from which cold air cannot easily find an escape, while Rothamsted lies in more open country where pools of cold night air cannot so easily form and where, owing to the greater exposure, the wind is often likely to be stronger than is good for fog.

Before a fog can form, the lower layers of the atmosphere must be so far chilled that the normal vertical lapse rate of temperature becomes inverted; that is, the temperature increases, instead of decreases, with height. When this happens vertical movement in the lower layers of the atmosphere is effectively curtailed, for the inversion acts as a lid or roof preventing passage of air from below the inversion to higher levels. When you see the smoke from a factory chimney spreading out horizontally (say, at 1000 ft. up) on a clear

G. H. T. Kimble



(Opposite) *Were we to heat our houses scientifically, we might succeed in banishing bad fogs, because what makes fogs really bad is the suspended soot, sulphuric acid and assorted salts that every domestic fire and old-fashioned factory chimney belch forth. Some optimists assert that by banishing these impurities you will banish town fogs altogether. England's mills (left) might then lose something of their "dark satanic" quality.*





Bill Brandt

(Above) Many of our worst 'inversion' fogs occur towards the end of a cozy spell when warmer air begins to stream across the country. The surface layers of the atmosphere are then quickly chilled below their dew-point, and the moisture they can no longer carry is precipitated as fog. (Opposite) English November

autumn evening, it means there is an inversion at that level and that poor night visibility—not to mention frost—is all the more likely on that account. An inversion has this

property whether the air below it is foggy or not.

In these circumstances any impurity suspended in the atmosphere must accumulate

near the place of origin: it cannot penetrate the top of the lid and usually there is not enough surface wind to carry it away horizontally. Thus when an inversion of temperature occurs, the concentration of smoke-particles in the air of towns increases rapidly and progressively. Onto these dust and dirt particles (each of which by night radiates into space its own tiny store of heat and so gets cold, chilling the damp air in contact with it) the excess of water in the cooling air will condense. The resulting droplets go on cooling by over-spending their daytime income of short-wave radiation, more water accumulates on them, they grow bigger, and the result is too well known to need description. Apart from rendering the fog dark-coloured and dirty, the smoke acts as a screen against the penetration to the earth of the sun's rays—an even better screen than is offered by pure water drops. Smoke particles near the 'lid' absorb the rays, get appreciably heated up by them and so help to increase the air temperature at the top of the fog layer, that is, the inversion is strengthened rather than weakened. In this way fog may persist all day over large towns, while in the surrounding country it yields to the influence of sunshine.

Assuming that a typical London fog is saturated with vapour water at a temperature of 40° F., then in 100 cubic yards—equal to the volume of air in a fair-sized living-room—we should probably find rather more than one pint of water (if we condensed out all the water vapour) and a small spoonful of suspended soot. The pure air holding these ingredients would weigh about two hundred-weights. This means that over Greater London, say within ten to twelve miles of Charing Cross, there would be nearly a thousand tons of water, as well as several tons of soot.

During foggy weather, horizontal visibility is often better in large cities than in the neighbouring country districts. In London, for example, traffic by road and rail is sometimes brought to a standstill in the suburbs when conditions are tolerably good in the central areas. This is partly attributable to the fact that a built-up area is less efficient as a 'radiating' surface than

fields and grass-lands, and partly to the higher temperatures which prevail in the closely populated parts as a result of artificial heating. (Londoners are familiar with the fact that in winter there are occasions when snow whitens the landscape in the outer suburbs, while in the city the precipitation is in the form of a cold rain, mixed perhaps with a little melting snow.) The net result is to keep the street level relatively free from the dense fog which concentrates near the top of the inversion, say from 1000 to 2000 feet above the surface. We then get the 'high fogs' which occasionally produce darkness at noonday. In recent years this kind of fog has tended more and more to replace the 'pea-soup' surface fog so notorious in the days of our fathers.

What, if anything, can man do about this fog nuisance? In an emergency, and at great cost, fogs can be dispersed temporarily. Thus when aerodromes have been enveloped in dense fog, holes in the fog, large enough to enable planes to make a safe landing, have been burned by igniting several hundred gallons of petrol, but the fog has invariably settled down on the surface again.

Of course there is no doubt that we could do quite a lot towards abating fogs where our large towns are concerned. Were we to heat our houses scientifically we might even succeed in banishing bad fogs, because what makes fogs really bad is the suspended soot, sulphuric acid and assorted salts that every domestic fire and old-fashioned factory chimney belch forth into urban skies. Some optimists go so far as to assert that by banishing these impurities you will banish town fogs altogether, "because town air is warmer than country air and so must do more over-spending before it can produce fog at all, if only it were equally clean".

Bill Brandt



The Monuments at Brou

by ARTHUR GARDNER, F.S.A.

Mr Gardner, who has travelled widely to study and photograph examples of medieval art, is well known for his lectures and richly illustrated books on French and English medieval sculpture

In the 15th and 16th centuries it was worth while to be a ruling prince. Never before in the West had there been so much power concentrated in a few hands or so great magnificence and display in court and palace. One way in which such princes sought to perpetuate the glories of their race was in the erection of a superb mausoleum to contain their own tombs and those of their family. The grandest of these is Henry VII's Chapel at Westminster; the elaborate tombs now in the museum at Dijon and the wonderful sculptures by Claus Sluter in what is left of the Chartreuse near the same city are the remains of the one planned by the most illustrious of the Dukes of Burgundy, and the famous bronzes at Innsbruck were prepared for the tomb-house of the Emperor Maximilian. In the same way Margaret of Austria, daughter of Maximilian and of Mary of Burgundy the great heiress who brought him the wealth of Flanders as her marriage portion, built the superb monument at Brou.

Brou is about a kilometre outside Bourgen-Bresse, a junction on the main line from Paris to Geneva and the Mont-Cenis via Dijon. The church contains some of the best examples of sculpture belonging to that interesting period of transition when the old Gothic inspiration made its final flicker with the help of the technical skill developed by the early Renaissance in Italy.

In 1504 Margaret lost her young husband, Philibert-le-Beau, Duke of Savoy, as the result of a hunting accident. In his memory she decided to carry out a vow made by his mother Marguerite de Bourbon as long before as 1480 to rebuild the sanctuary at Brou as an offering for the cure of his father Philippe Comte de Bresse after an accident.

The work of rebuilding the Benedictine monastery and its cloister was begun in 1506, but before this was finished Margaret was summoned to become regent of Flanders and had to take up her abode at Malines. But she never gave up her project and as soon as she was settled sent for the most famous artists of her day, Jehan Perreal, the painter, and Michel Colombe, sculptor of the tomb of the

Duke of Brittany at Nantes, to supply designs and sketches for the work at Brou. These projects, however, came to little as these great artists were too old to undertake so great an enterprise, and in 1513 the construction of the church was entrusted to a Fleming, Loys van Boghem, as master mason. Twice a year he returned to Malines to submit plans and report progress to the Duchess. In 1516 Jean van Roome, or de Bruxelles, supplied designs for the tomb, and by 1522 the choir was finished and considerable progress made with the sculptures. Conrad Meit and his brother Thomas, Germans by birth but brought up in Flanders, were called in to make the big effigies, for which Carrara marble was imported with great difficulty and expense. In 1530 Margaret died; but she left instructions in her will that the work should be carried on with energy, and the whole was completed in 1532.

The exterior of the church is a little disappointing; there is some clumsiness in the design and in the way the buttresses are applied to the façade which could hardly have appeared in contemporary work in northern France, but some allowance must be made for 18th-century restorations to the roof and upper parts. The west door is fine, ornamented with sculptures which are good examples of the period. After the dread visitation of the Black Death which ravaged Europe in the middle of the 14th century, the whole outlook and sentiment of religious art was changed. Instead of the serene and joyous spirit of the 12th and 13th centuries, which would have placed in such a position the Majesty of Christ or the Coronation of the Virgin as symbols of the triumph of Christianity and the Church, we have here the *Ecce Homo*, the Christ bound and crowned with thorns, as an appeal for pity. The increasing individualism of the time is also shown by the introduction as principal actors in the design of the Duke and Duchess of Savoy presented at the throne of mercy by their respective patron saints. In earlier times living or lay personages never appeared, except occasionally as small kneeling figures of donors at the foot of the composition.

The interior of the church is also typical of the flamboyant or latest phase of Gothic architecture, spacious and logical in design; the prismatic mouldings are carried round the arches and up to the vaulting ribs without the interruption of capitals, and a carved perforated balustrade running along the base of the clear-storey windows takes the place of the earlier triforium.

It was in the choir and its fittings that Van Bogenhem exhausted the riches of his imagination and toil, and it contains what is in effect a museum of early 16th-century art in stone, marble, wood and glass. It is separated from the nave by a richly carved screen, or *jubé*, as the French call it, which also provided a way for Margaret of Austria to make her descent to her private oratory arranged in the north aisle and equipped with a fireplace and a richly decorated window, or squint, allowing a view of her tomb and the altars at the east end of the church. The screen is decorated with elaborate pierced tracery, statuettes and sharply-cut foliage in which the letters P and M, for Philibert and Margaret, are again and again repeated.

The tomb of Duke Philibert is in the centre of the choir, on the north side is that of Margaret of Austria herself, and opposite on the south side that of Marguerite de Bourbon, her mother-in-law. That of the Duke consists of a black marble slab on which lies his effigy supported by pedestals composed of traceried niches containing exquisite little figures said to represent the virtues of the deceased. As the

attributes held in their hands have mostly been broken off it is impossible to particularize, but they are very attractive representations of the latest Flemish fashions

The jubé, or screen, dividing the nave from the choir at Brou, is a stone erection of very rich design. The sharply-cut foliage and elaborate cusping of the arches are characteristic of the Franco-Flemish school of architecture. The letters P and M, for Philibert and Margaret, repeated over and over again can just be seen in this photograph



All photographs by the author



The effigies of Margaret of Austria (above and below) and of her husband, Duke Philibert (opposite), at Brou are in Carrara marble, and are by Conrad Meit, a sculptor of German origin, but probably trained in Flanders. The Duchess is shown in her ducal robes on the top of the tomb, but below as dead, though without the revolting marks of decay often found at the time



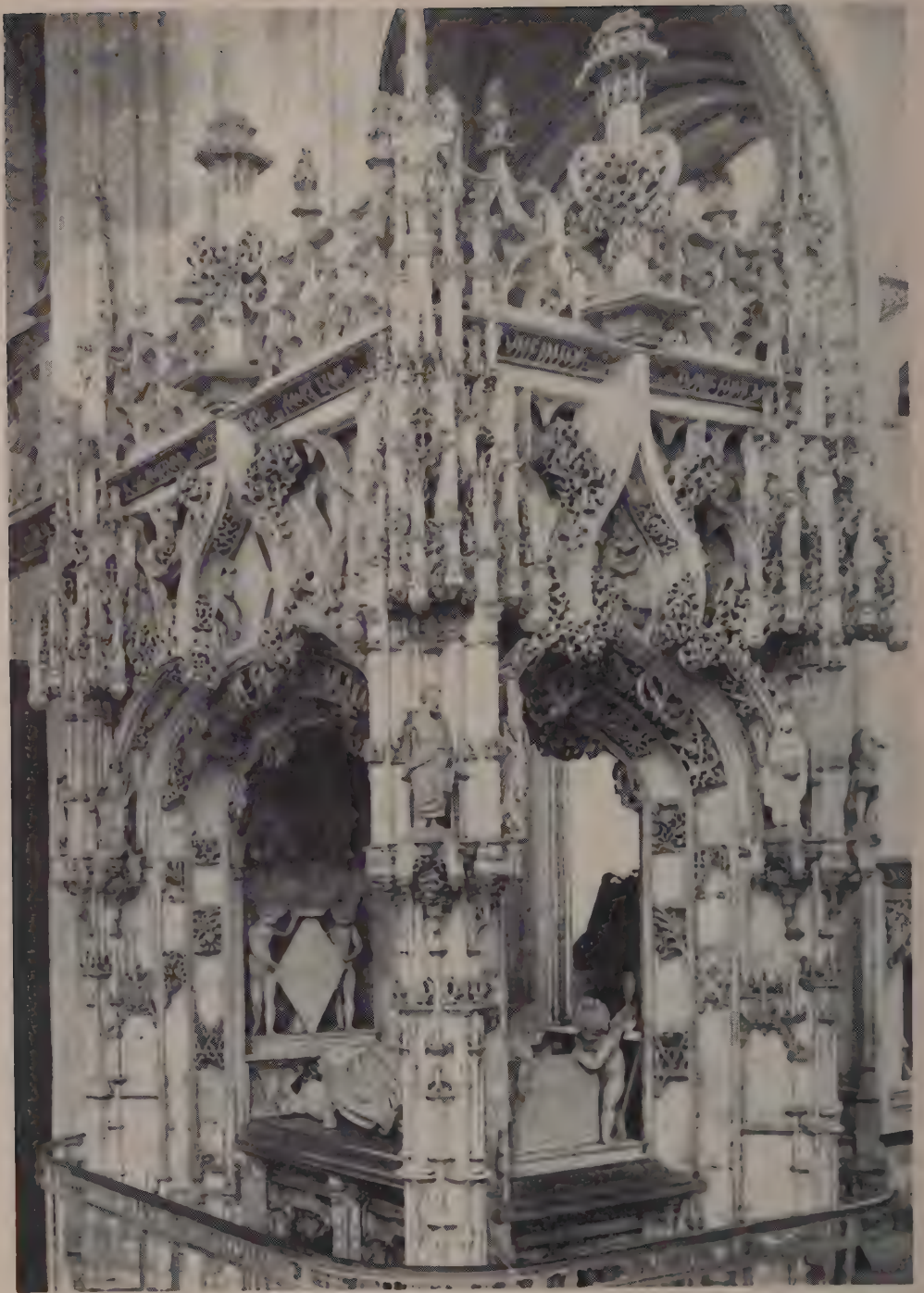
of the day. Among them a delightful little Magdalen holding her pot of ointment looks as though she had been originally designed for a place on one of the other tombs, and a Virtue trampling on a prostrate Vice is the production of an entirely different school, evidently the work of an Italian artist imported with the Carrara marble for the big effigies. Its dramatic and almost theatrical display is out of harmony with the quiet restraint and delicacy of Van Boghem's Flemish sculptors. The white marble *putti* holding the shield, arms and gauntlets of the dead prince, grouped round his effigy, are also by an Italian hand, and although not without individual merit they seem out of place in their surroundings, just as the harsh white tone of the Carrara marble clashes with the soft greyish ivory-like surface of the Alpine marble in which the Flemish sculptors worked. We are not surprised to find the name of Onofrio Campitoglio of Florence recorded as working here.

The tomb of Margaret herself is a marvel of elaborate workmanship in two storeys. On the upper lies her effigy, in coronet and robes, and in the lower she is represented as dead with her long golden hair spread out over her couch, a much more satisfactory version of the *memento mori* than the decaying

corpse familiar in English 15th-century monuments. Above rises the superb canopy, on which Van Boghem exhausted all his resources. Spired niches shelter little statues of saints, some of which like the St Catherine, sword in hand and trampling on the tyrant at whose hands she suffered martyrdom, and the St Barbara, clutching the tower in which she was imprisoned, are twin sisters of the lovely little Virtues of Duke Philibert's tomb. The deeply undercut and spikey foliage, based on the thistle rather than the vine, typical of the last phase of the Gothic inspiration, is executed with masterly skill, and the M's and P's worked into it are interspersed with Marguerite daisies. A little fat angel at the top shows the first beginnings of the Italian Renaissance infiltration which was destined so soon to kill the native arts of the north.

The Tomb of Marguerite de Bourbon is on a less ambitious scale, but is carried out with the same wealth of ornamental detail. The effigy is in alabaster, and the little figures on the tomb chest, technically described as 'weepers', are clad in heavy mourning cloaks and carry on the tradition of the school of Claus Sluter in the Dijon tombs, but they are interspersed with little Italian 'putti', in which we may again see Onofrio's handiwork, harbingers of the coming change.



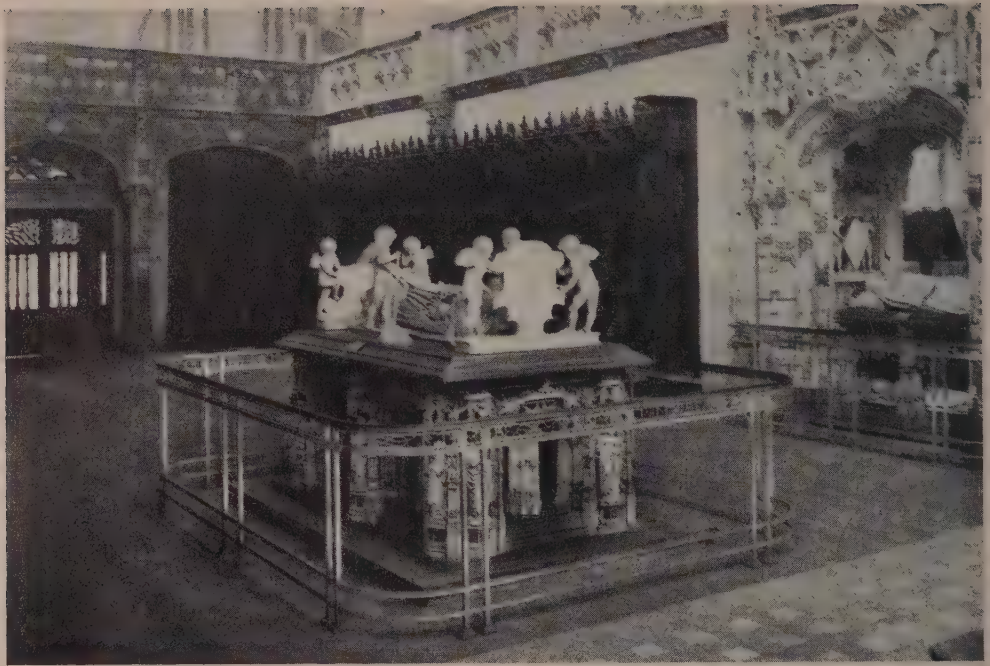


The superb canopy over the tomb of Duchess Margaret, a masterpiece of Flemish art



(Above) Two exquisite little figures from the pedestal of Duke Philibert's tomb. On the left, one of the 'Virtues', purely Flemish in character; on the right, 'Magdalen' with her pot of ointment, showing the beginning of Italian influence. (Right) 'Weepers' from the tomb of Margaret de Bourbon, hooded figures of the Dijon school separated by Italian amorini





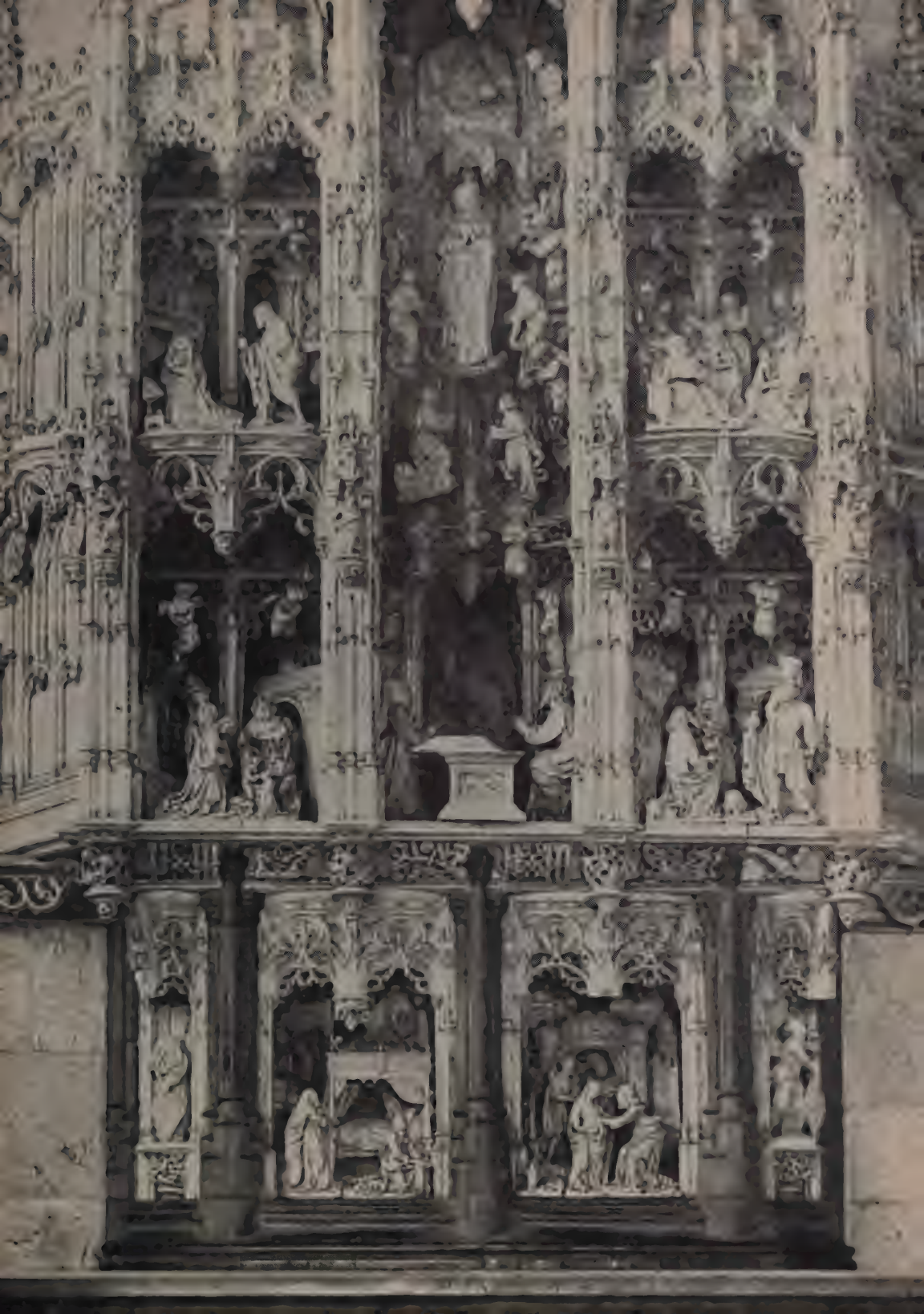
(Above) *This general view of the choir at Brou shows the tomb of the Duke in the centre, that of the Duchess on the right, and the jubé in the background beyond the richly carved wooden stalls. The little amorini grouped round the effigy appear to be Italian work. (Opposite) The Retable of the Seven Joys of Mary, the work of the Flemish artists working under Van Boghem*

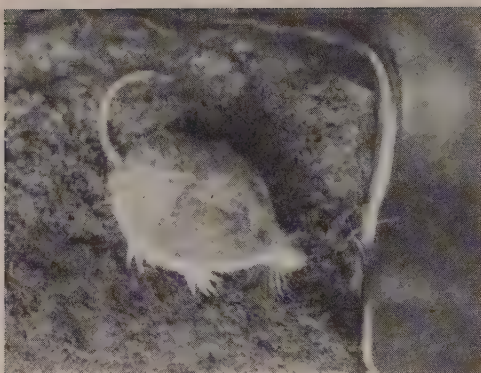
The chapel on the north side of the choir adjoining the oratory was given special care in honour of the foundress. It contains the retable of the Seven Joys of Mary,—the Annunciation, Visitation, Nativity, Adoration of the Magi, the appearance of Jesus to his mother after the Resurrection, Pentecost, and the Assumption. These little scenes are set in the elaborate foliated niches we have seen in the rest of the work of Van Boghem's school, and it is interesting to compare the sharply-cut draperies in the little reliefs with those of the statuettes of the tomb and also with those in the famous pictures of the Flemish school, such as those by the Van Eycks, which have a certain sculptural treatment.

The oak stalls also display a magnificent wealth of decorative carving. They seem to have been made by local workmen under the direction of Pierre Berchod of Bourg, and were completed in two years, 1530-32,—a remarkable feat. The design is so different

from that of the stalls in the church at Bourg itself, that it seems the design of the rich canopies must have come from Flanders like those for the tombs, and Jean de Bruxelles may have had a hand in it. The stalls on the south side bear scenes from the Old Testament and those on the north from the New, and to describe them in detail would need a monograph to themselves. At the corners larger figures introduce the series, and the Moses, with his gaunt beardless face and violent action, is an astonishing break-away from the traditional orthodox representation.

Photographs can give no adequate record of the stained glass windows, a superb translucent form of decoration. They were made by Jean Brachon, Jean Orquois and Antoine Noisin, the last of whom is also known to have been working at Lyons in 1515 and 1520, from which it is reasonable to assume that the windows are of French, or should we say Burgundian, rather than Flemish origin.





The Ways of a Water Shrew

by PHYLLIS KELWAY

How many people have seen a water shrew alive? Not many; and most of those who have are fishermen. For, owing to its fondness for water, this shrew is more often seen than the other two British shrews, the common and the pigmy; but even so, a slinky strip of black fur measuring about 82 millimetres from tip of snout to base of tail is not exactly a beacon on the landscape.

In most specimens, the long tail of the water shrew (*Neomys fodiens*) in conjunction with the sharp line of demarcation between the black fur of back and sides and the creamy-white fur of its belly are sure marks of identification. In addition to these characteristics this shrew often has a small ridge of white fur immediately behind each ear, and smaller white tufts behind the eyes. Close up, the water shrew reveals a double fringe of hairs on the underside of the tail; its hands and feet have also neat little fringes, presumably as aids to swimming; but in the field such niceties cannot be observed by even the quickest eye.

Pigmy and common shrews are easy to breed in captivity if you are willing to take endless trouble over their food. I have not yet bred water shrews, and shall have to give up my scheme for doing so until after the war. A water shrew that I have now moulted in early September, donning a much darker suit than his summer jacket.

The melanism (dark coat due to abnormal pigmentation of the hair) of the water shrew does not appear to be a geographical variation as is the melanism of the water vole. Nevertheless, some biologists suggest that the British form, *fodiens*, is usually to be dis-

tinguished by its dusker general colouring from the Continental forms.

Unlike the field mouse, which seems to establish a fresh variation in every island it inhabits, the water shrew is chiefly a mammal of the mainland. For instance, it is neither to be found in the Orkneys, the Outer Hebrides nor the Shetlands; it has not even a representative in Ireland. But in England, Scotland and Wales it is widely distributed. There are probably no counties without a few pairs.

Most of my observations on the species have been carried out in Somerset and Hampshire, where it makes itself comfortable on the sluggish rivers and their tributaries. Yet like the other two, the water shrew is not the kind of fellow to insist on one type of country. His adaptability and his roving spirit take him high and low; you may meet him in the Fens where he is known as the blind-mouse or water-rannie; in Scotland as the water-mole; in Cheshire as the otter-shrew. I have met him in Derbyshire on the banks of the river Dove, a very different river from the slow-moving placid Parrett of Somerset. Rivers and streams are not necessary to him; he will live happily on a pond with the moorhens, or on a Scottish tarn with the sandpipers. He can live in the low-lying plain of Sedgemoor or over 1000 feet up in Scotland, the arctic regions of Russia and Siberia, the Carpathian Mountains and the wooded areas of Scandinavia.

As far as I know *Neomys fodiens* is not living under any name in America; and it is not known by the Tibetans of the Himalayas; but with these exceptions it seems



Photo taken by the author

The water shrew can often be identified by its tail, which is invariably longer than that of the common shrew. The sharp line of demarcation between the whitish fur of the belly and the sides is clearly visible in the photograph below



to have a wide geographical distribution.

Owing to its adaptability the water shrew is not hard-pressed for living space. On trapping the smaller mammals systematically you will find that the species often lives a mile or so from water, and apparently on some occasions in the company of the common shrew. I do not think this is from choice. A competitive world probably throws it up against the common shrew, and it may be that it bounces off again at the first opportunity. The shrew, whether water, common, or pigmy, is an opportunist. It makes both natural friend and natural foe serve its ends. Cold or hunger may compel water shrews to join field mice, field voles and other shrews in their journeyings. "Till, merely from nervousness, not from goodwill, they march along shoulder to shoulder."

The water shrew is not called the otter-shrew without good reason. Vicious as the otter is, I doubt if any animal could compete with the shrew in pugnacity, courage and fierceness. In search of food, it is a little demon, biting and squeaking in its attack as though its life depended on success. When living on river or stream its chief articles of

diet are crustaceans found under water, small fish like stickle-backs, loach, minnows and bullheads, and the soft-bodied larvae of water insects. On rivers like the Dove of Derbyshire and the Wharfe of Yorkshire, it accounts for a fair number of crayfish as may be seen by the neat piles of legs and oddments left on stones above water-level. Caddis-worms are always eaten when obtainable; hundreds of their rejected cases can be seen on the banks of a good caddis-fly stream.

The human fisherman knows this black water-gnome better than anyone, for standing silently by the water's side he has splendid opportunities of observing it. Responding quickly to tremors of the ground and to sound, the shrew cannot see much beyond its nose, and under water it captures most of its prey by thrusting its snout beneath stones and leaves. In the water it is superb, diving swiftly, and swimming skilfully far down below. It is ever on the move; were it not for its prolonged periods of sleep I do not see how its nervous energy would last, but it retires frequently to its nest in someone else's hole or under a tuft of grass, sleeps with its snout tucked round between its hind legs, and

This photograph was taken at a speed of $\frac{1}{300}$ th of a second. The water shrew, in rapid motion, was using its sharp teeth and all four feet to heave itself from the water



comes forth as a giant refreshed. Under water the air bubbles cling to its coat, changing it from black to silver. I have sometimes seen it swimming furiously a couple of feet down, its coat bejewelled, its body streamlined, working like some mechanical submarine toy, more often under the decaying leaves and muck of the bottom than above. Usually, I have not counted up to more than thirty before it is up again, paddling almost hysterically on the surface with two-thirds of its body above water, its long tail straight behind and its twitching snout uplifted like some aerial, testing the world for a new wavelength.

Its velocity under water has seemed to me to be greater than that above; for on surfacing it immediately becomes a *fussy* swimmer, whereas down below it moves all-out like a fast speed-boat.

The water shrew's coat never shows saturation point; the glistening air bubbles leave the fur as soon as the animal emerges. Should you see a water shrew with a wet coat you may be sure it is sick.

As a diver, the shrew can compete with the otter on its own river. A skilful downward jumper, it shows no objection to leaping from its landing-stage a foot or more above the surface, and diving in with a little splash; but like the otter and the water vole it frequently dives in the middle of a swim, sometimes because danger threatens and sometimes because the mood takes it that way.

The water shrew seems to me to have more muscular strength than either of its two relations. By thrusting its mobile snout underneath it can overthrow stones of comparatively great weight. I have seen it heave up a stone weighing a pound with only a brief struggle and it itself turns the scales at 12 grammes!

One shrew I had in confinement grew so tame that it would sit on my hand without biting, and when it used its snout to push my fingers apart I could feel the force behind. Where the hands of the common and pigmy shrew are puny and ineffectual, those of the water shrew reveal a limited strength. I have even seen a water shrew digging with its fore-paws on a mossy stone to very good purpose.

In character the water shrew is just as greedy as the other two, and that is saying a great deal. But its ferocity is probably necessary. Its food requires catching, and it is considerably hindered in life by an awkward digestion. From observations, I should say that it can afford to sleep longer than the other two shrews; my pigmies and common shrews seldom had more than an hour's sleep at a time. The shrew's food digests so rapidly that within an hour of a meal its stomach is empty. The stomach of a dog can remain empty for several days; but the shrew cannot survive prolonged hunger. Without food I believe any one of the three shrew species might die in three hours. This being so, the water shrew is an exceedingly busy person. What with nest-building, food-finding and the requisite number of hours spent in sleep, its days are full. No wonder, then, that it often attacks creatures overwhelmingly stronger than itself. I have seen a water shrew tackle a frog three times its own size, seizing the slippery thing by its hind leg, mouthing and talking all the while in excited squeaks as though in fear that the meek cold-blooded batrachian might be capable of turning and rending it. A large frog can put up a sharp tussle (although it cannot fight) even when seized by a grass snake; and I have seen a frog make off with an angry little black devil of a shrew hanging on for grim death behind.

The water shrew's companions are frequently water voles and field voles; I think it must be a sore trial to these friends; for in close contact with others—fellow shrews, mice or voles—the water shrew is impossible.

Although the policy of the water shrew is to make use of the burrows of other animals, it is capable of enlarging for itself holes in soft ground. Its home usually has one tunnel leading underwater. From these holes it can make raids upon molluscs and fish, and it has been known to attack with success fair-sized trout and carp. This fondness for fish does not make it a popular inhabitant of trout hatcheries. The bulk of food devoured by one shrew is certainly out of all proportion to its size—the result of a digestion that knows no speed limit.

The Isle of Man

by RENÉ ELVIN



ONCE upon a time, when Finn MacCool, a king of ancient Ireland, was hard pressed by an equally powerful opponent, he threw a block of Irish earth at him. To this feat of strength, says an old story, the Isle of Man owes its origin. I find this tale much more attractive than the prosaic explanation of scientists, according to whom the island once formed a part of the mainland—a fact proved, they say, by the slaty rocks seen in the stratified cliffs around Douglas, which are of the same Silurian formation as those of Cumberland. To those who point out that the gently rounded slopes of the hills on the island have none of the rugged grandeur of the Cumberland mountains, geologists reply that the gales which have swept the island from time immemorial have eroded away the jagged asperities of its outlines.

In spite of these winds, whose effect may be observed in the branches of the trees, which are invariably bent to the north-east, the climate of the island is remarkably temperate, as is shown by the profusion of fuchsias, hydrangeas, myrtles and escallonias which grow in the open air. And the natives point with pride to the sun statistics, which show that the island has a larger share of sunshine than any part of the United Kingdom, except the south and south-east coast and the Channel Islands. The divergencies in the amounts of rain in the different parts of the island are striking: they vary from 61 inches on the highest spot, Snaefell (2034 feet), to 25 inches at the Calf of Man. The town I know best, Ramsey, is in the most humid area, with an average of 46 inches.

* * *

The inhabitants of the Isle of Man are of Celtic origin and have been ruled in turn by Irish, Scandinavian, Scottish and English kings, but, whoever their rulers, the Manx people always made good the motto which accompanies their coat of arms: "*Quocunque jeceris stabit*"—"Whichever way you may throw me, I shall fall on my feet". The Manx Arms—and Legs—are generally believed to be of Sicilian origin, and it is

thought that they were introduced in the 13th century by Alexander III of Scotland; their proper heraldic description is "Gules, three armed legs proper, conjoined in fess, at the upper part of the thigh flexed in triangle, garnished and spurred topaz", and it is popularly supposed that the legs are kicking respectively at England, Scotland and Ireland.

As one travels about the island, remnants of its history are to be seen everywhere, but no visible vestige remains of its oldest ruler, and most curious figure, a necromancer, named Mannanan-Beg-Mac-y-Leir, who devised a defence of the island unparalleled for cheapness and effectiveness: thanks to his magical art, he camouflaged it under a cloud of mist, and also contrived that every foe approaching his realm should see a hundred men ready to oppose his landing for every one existing in fact.

The island was converted to Christianity in the 5th or 6th century by missionaries from Ireland. Three hundred years later, the Manx population received hospitably the Norsemen headed by King Orry, and even went so far as to accept the New Order imposed by the Northern invaders, who are credited with having established the institutions of the island as they exist to this day: the Tynwald Court, the House of Keys and the division of the territory into six counties or 'sheadings'. The tradition of this Scandinavian period is kept alive both by the keen interest in archaeology which characterizes so many Manxmen, and by the numerous Runic Crosses which can still be found in nearly every parish. Twelve kings of Norse origin are said to have occupied successively King Orry's throne. They must all have been clever politicians, for they succeeded for 300 years in maintaining their autonomy while paying allegiance at the same time to Norway and England.

* * *

It was under the Scandinavian regime, in 1154, that the Diocese of Sodor and Man was first established. The word 'Sodor' refers here to the 'Southern Isles' which once belonged to Norway, as opposed to the 'Northern' Isles of



All photographs from F. P. Huggins

During the summer months Douglas used to be filled with holiday-makers, but the rugged cliffs made one of their favourite amusements, sea-bathing, difficult. Here, however, at Port Jack Cove, they found deep water and safe bathing. Note the structure of the slaty rocks, tilted almost vertically, which enclose the cove

Orkney and Shetland. Though the connection between the 'Kingdom of Man' and the 'Isles' came to an end in 1266, the diocese remained under Norway till the 15th century, and the bishops have retained to this day their original title, which often arouses curiosity.

One of the incumbents, Bishop Rowley Hill, is credited with the following reply to a correspondent:

What does the title *Sodor* mean?
Pray tell me if you can;
So strange are many facts we glean
About the Isle of Man;
That all the cats are wanting tails

We hear for evermore;
It may be this accounts for tales
Which reach the British shore.
Well, *Sodorenses*—Southern Isles
Is what the title means;
Although perhaps you say with smiles,
"Tell that to the marines!"
For in the palmy days of old
When things went harum-scarum,
The Bishop did the title hold
Of "*Man et Insularum*".

The Norse dynasty came to an end when, in 1266, King Magnus of Norway, beaten in a war he waged against Alexander III of Scotland, had to cede Man and the Hebrides to the victor. Twenty years later, however,



The Northern Plain looking down from the mountain road to Snaefell towards the little town of Ramsey. In the far distance lies the point of Ayre, and immediately to the south the Bride Hills, which are of sandstone carried over from the Lancashire Red Sandstone, presumably by some Mersey-Ribble-Dee river system, when the Island formed part of the great Continental Plain

Alexander was killed in an accident by riding over a precipice, and the Manx people asked for and obtained the protection of "the great Plantagenet, Edward I", to whom they formally submitted in 1290.

* * *

The English kings did not take much interest in the small, far-away island in the west. They used it mostly to reward their favourites, a procedure which had the additional advantage of leaving these to fight for its possession with the Scots, who were always reluctant to give up anything to the English.

From the Earls of Salisbury the island passed in 1392 to the Earl of Wiltshire, who, owing to a little matter of high treason, lost his island, and his head, in 1392. Then the Earl of Northumberland, the father of Percy Hotspur, lorded it for four years, until, in 1405, Henry IV bestowed the island on Sir John Stanley, "with all the regalities, franchises and rights belonging thereto, with the patronage of the bishopric, under the title of the King of Man". The only acknowledgment of the suzerainty of England was the presentation of a cast of falcons on every Coronation Day.

The Stanleys remained in possession for over three and a half centuries, but seldom bothered to reside in their kingdom. Every schoolboy knows that it was a Stanley, Sir Thomas, who placed the crown on the head of Henry Tudor after he had defeated Richard III at Bosworth and that, as a reward, Sir Thomas was created first Earl of Derby. But, to Manxmen, the most famous Stanley and the only one to be distinguished by being called "the great" was the seventh earl (1627-1651), who fought for King Charles I during the Civil War. On leaving his residence, Castle Rushen, in Castletown (still one of the show places of the island), to go into battle he entrusted its defence to his wife, dauntless Charlotte de la Trémoille. After Cromwell's victory and Derby's capture and execution, she decided to hold the island against the expedition launched by the Commonwealth; but the captain of her forces, William Christian, surrendered to the Parliamentary commander; after the Restoration, the Countess had Christian executed. Christian, under his popular nickname of *Illiam Dhone* (Brown-haired William), has remained a legendary figure among Manxmen, who see in him, not so much the betrayer of the trust placed in him by the Countess, as the patriot who prevented useless bloodshed and preserved their lands and liberties; Sir Walter Scott has made him one of the central figures of his novel *Peveril of the Peak*.

* * *

The saintly Bishop Thomas Wilson (1663-1756) was appointed to the see of Sodor and Man after having, with characteristic modesty, declined it for nearly five years as being too great a responsibility. But his patron the Earl of Derby was as obstinate as Wilson was persistent, and refused to appoint anyone else. The see therefore remained vacant until 1698, when William III threatened to exercise the Royal prerogative and appoint a new Bishop himself; thereupon Wilson reluctantly accepted the office thrust upon him, of which he was soon to become the greatest incumbent. It was thanks to his influence that Manxmen obtained their 'Magna Charta', the Act of Settlement of 1703. Though Queen Anne tried to prevail upon him to leave his see for a more important preferment, he remained steadfastly attached to his flock, who in return regarded him almost with adoration. His benefactions to the poor, his reforms in the ecclesiastical constitution, his simple piety and his de-

votion to duty were worthy of a veneration which endures to this day. The Manx novelist, Sir Hall Caine, has described aspects of Bishop Wilson's life in *The Deemster*.

It was during his bishopric that the tenth earl died without issue and that the lordship passed to a distant relative, James Murray, second Duke of Atholl. At that time the British Government looked with disfavour on the isle, which had become a hive of smugglers. Moreover, the local enactment providing that debts contracted in Great Britain and Ireland were not recoverable in Man attracted there a vast concourse of 'undesirable aliens'. When the patience of the British Government came to an end, the third Duke, in 1765, was induced to surrender his regality and customs duties to the Crown for £70,000 and an annuity of £2000. Manxmen thoroughly disliked the bargain, and an unknown poetaster well expressed their disgust:

The babes unborn will rue the day
That the Isle of Man was sold away;
For there's never an old wife that loves a dram
But that will lament for the Isle of Man.

In spite of this and other outbursts, Manxmen never recovered their 'rights', and the fourth Duke of Atholl, after interminable haggling with the British Government, ceded his remaining privileges in 1829 against a lump sum of £417,114. Though the price exacted was an exorbitant one, the Government made what turned out to be an excellent bargain: in about thirty years they gained from surplus revenues, interest on the landed estates and royalties on mines, more than the whole sum paid to the Duke.

Under the administration of Lieutenant-Governors appointed by the Crown, Manxmen have ever since been allowed to rule themselves according to their own time-honoured rules and traditions.

* * *

Constitutionally, the Isle of Man is a miniature Dominion, with much the same form of Government as Great Britain, the Lieutenant-Governor corresponding to the Sovereign, the Council to the House of Lords, and the House of Keys to the House of Commons. One important difference is that the Council is at the same time the Manx Cabinet, which assists the Governor in matters of administration. The chief minister is called First Deem-





(Opposite) Ramsey Harbour, which is formed by the entry of the Sulby river into the sea. The photographers seen in this picture are making use of the foot-bridge to take snapshots of the wild swans which live along the river. (Above) Ramsey, called by Manxmen the 'Queen of the North', is a peaceful little town. In the foreground of the picture is the beginning of the mountain road, climbed yearly in pre-war days by riders in the famous Tourist Trophy and Amateur Motor Cycle races. In the late 1890's, Ramsey was much improved by the creation on waste land of a beautiful little park. The Victorian boarding-houses of the water-front have been so dilapidated by internees that they will probably have to be reconstructed after the war, to the great advantage of all concerned. (Right) Ramsey fishing-boats bring in with their catch star-fish and other marvels of interest to the young





ster, and the Bishop of Sodor and Man sits as of right in the Cabinet. The House of Keys is composed of twenty-four members, who are elected for seven years by an electorate divided into ten districts: the six 'sheadings' and the four towns of Douglas, Ramsey, Castletown and Peel.

No law is valid in Man until it has been solemnly promulgated in the English and Manx tongues on Tynwald Day, celebrated yearly on July 5, except when that date falls on a Sunday, in which case it is put off till the following day. Tynwald Day is a national holiday for the whole island, and a large proportion of the population (150,000 according to the census of 1931) congregates on Tynwald Hill, a small artificial mound close to the village of St John, near Peel. The origin of this custom goes back to Scandinavian days, and some of the quaint oaths of office pronounced on this occasion hail from the distant past. Here is for instance the Deemster's oath:

By this book and by the holy contents thereof, and by the wonderful works that God hath miraculously wrought in heaven above and in the earth beneath in six days and seven nights, I do swear that I will without respect of favour or friendship, love, consanguinity or affinity, envy or malice, execute the laws of this Isle justly

(Below) *The castle at Peel. Within its walls is the Cathedral of St Germanus*





(Above) Sulby, the largest and finest of the Manx glens. (Below) Farm holding at the foot of Sulby Glen, surrounded by graceful ash trees and gorse—always in bloom





In order to drain the lower workings of the lead mines at Laxey this gigantic wheel was erected, worked by the Laxey river. It was built in 1854 to the design of a Manxman, Robert Casement, is 73 feet in diameter, and can pump 250 gallons a minute from a depth of 1200 feet. For 90 years it has kept the mines free from water

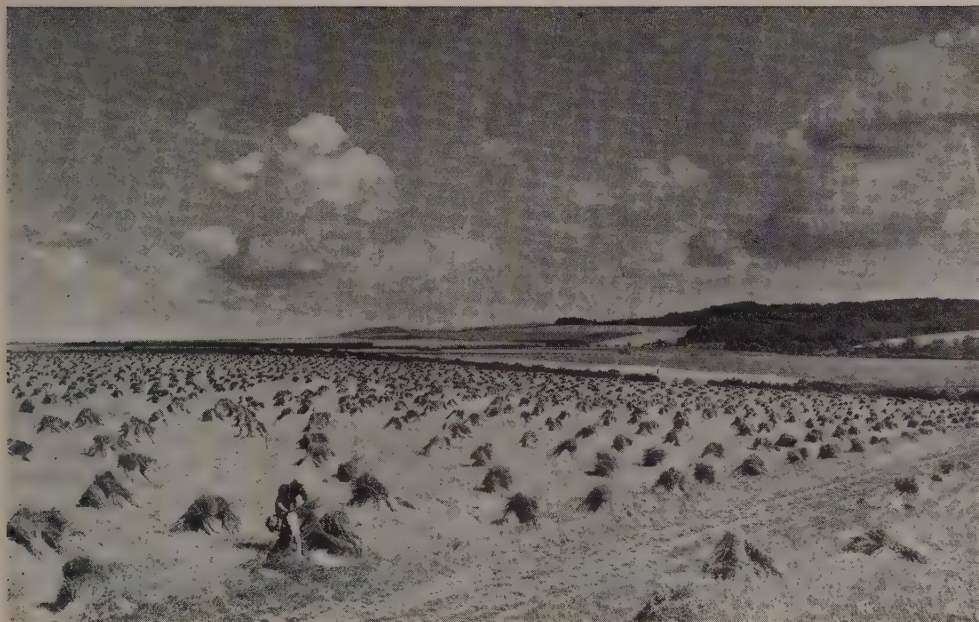
betwixt our Sovereign Lord the King and his subjects within this Isle, and betwixt party and party, as indifferently as the herring backbone does lie in the middle of the fish. So help me God and by the contents of this book.

The allusion to the herring is a symbol of the large part played by the fishing industry in the economic life of the island. The Manx have always been bold and skilful sailors, and they recall with pride that it was a Manxman, Captain John Quilliam, who steered the

Victory at Trafalgar. In the decades before the war, however, fisheries and even agriculture took second place to the development of the Isle as a holiday resort. Unfortunately, however, many of the visitors who come in their thousands to the island (in a normal season, about 20,000 persons in a day) never go further than the chief town, Douglas. As far as I am concerned, anyone can have Douglas and all the fun of the fair, if they will leave me to enjoy the calm beauty of Sulby Glen, Ballaglass Glen and Glen Roy, the stately and historic Castle Rushen, the pleasant, busy fishing ports of Peel and Ramsey, and the magnificent views from South Barrule and Snaefell, from the top of which it is possible to see, according to the Manxman's proud boast, no less than five kingdoms: England, Scotland, Ireland, Wales—and Man.

At present, of course, all festivities on the island are in abeyance. The Manx sailors who have not enlisted in the Royal Navy or in the Merchant Marine provide the Isle and part of the mainland with fish;

Manx farmers are digging, ploughing, sowing and reaping for victory; even the old Laxey mines, which include lead ore, as well as some copper, zinc, and silver, are keeping the famous Big Wheel turning. Visitors now are few—and most of them are there against their will: prisoners of war or internees. But the friendly Isle of Man looks forward to the day, not now far distant it hopes, when holiday-makers will once more return to enjoy the beauty and pleasures of its shores.



By courtesy of the 'Farmer and Stockbreeder'

The Wiltshire Flax-Mill

An Example of True Husbandry

by H. J. MASSINGHAM

In the form of a personal memory, Mr Massingham, well known to our readers as the contributor of a valuable series of articles on England, discusses an example of English husbandry that might be taken as a model—and a good omen—for the sane and proper development of one of our greatest national assets: the land. The illustrations are, with the exception of the flax field shown above, from photographs specially taken for us by Mr Bill Brandt

HANGING up in my museum is a 'strick' of dressed flax that recalls to me one of the most fruitful of my personal memories. It is seldom nowadays that the opportunity presents itself of revisiting those parts of England that contain more fragrant recollections for me than others. When it does I make the most of it. Not so much for the sake of dwelling in the memorial spirit upon the old familiar faces of hill and vale as to contrast this recovery of old loves with what I feel now.

My former explorations of the Wiltshire Downs were partly archaeological, partly topographical, partly architectural and partly in search of stray evidences of our lost rural culture. There was therefore a strong

nostalgic and historical element in them. But when I once more set eyes on the round barrows of Overton Hill and looked across the rich Pewsey Vale to the long sweep of the scarp of Salisbury Plain from the summit of Oare Hill, I realized that the old self had given place to a new self.

But I was happy to know that the continuity between them had not been broken. Rather I felt that the old preoccupations had been fused and distilled into a new perspective. It was more generalized and less concerned with the complexities of detail than with a few broad principles both of man's relation to the earth and that something more than the earth which the medieval philosophers called the natural law. These principles can be more or



Photographs by Bill Brandt

'Steepling' or 'chapelling' in the field flax that has already been through the retting tanks

less boiled down to one—the principle of beauty-in-use and use-in-beauty. These can be still further reduced to a single term, quality. For quality is an attribute both of beauty and use, the true bridge that unites them. Before it was broken down—and it was certainly broken down by the discovery of cheap power and the development of mass production for the sake of monetary profit—all the native cultures which left their imprint on the Wiltshire Downs obeyed this tripartite principle. Fashions, periods, ideas, economies, attitudes and expressions of them changed, but this trinity changed no more than the Downs themselves. It has behind it the eternal validity of the natural law and, so long as man did obey it, he was always in harmonious relation with his natural environment.

So, in revisiting these Downs, I no longer bothered to distinguish one age or civilization from another. I saw them all as different aspects of this triple binding force. I had forgotten a good deal of what I knew in the old days, but I had this triune principle firmly embedded in my consciousness. Its incarnations, variations and interpretations

are endless both on the face of Wiltshire nature and in the works of Wiltshire man. But three examples of its application, as being more definite and direct than others, fixed themselves on my mind. One was an old red-brick wall built in a succession of inward and outward curves round a kitchen-garden at Market Lavington. The design, I gathered, was to prevent fruit trees trained along the bastion-like projections from touching the wall and so becoming accessible to insects. The flowing curves that gave the wall such individuality and beauty of line were only incidentally for beauty's sake; their purpose was to protect the garden from exposure and the fruit trees from the predator.

The second example was the celebrated Market Hall at Malmesbury. This most lovely and sumptuous monument of an integrated art and religion was nothing more or less than a local stock exchange, so long as the 'word 'stock' be relieved of its modern debasement.

The third example was the High Street of Marlborough, that generous street of a small town whose spaciousness is so companionable



Fanning out the skirting of the steeples. Later the flax is built into 'barts' or stooks to complete the drying process before it is stacked or removed to the mill. (Below) Flax crop in bart

with its downland setting. Many of the roomy residences, workshops and public buildings of the old russet-red town are hung with fish-tail tiling, a local character much commoner in East Anglia and south-eastern England than here at the axle-tree of the Marlborough Downs. By thus drawing upon the Tertiary gault in its neighbourhood, the sturdy little chalk town adds to the comfortable utility of its houses the touch of grace that transforms it.

I went into Wiltshire not for a sentimental journey but to find out something about the flax industry, once one of the commonest of our native crops and recovered since the war from having become almost obsolete. (The growing of flax in England was as early as 2000 B.C. The fibre was spun with bone spindle-whorls and carded with bone and wood weaving-combs.) One of its stations employs some 200 workers and processes the crops of 3000 acres scattered over a wide area.

First of all, the fields of flax had themselves to be seen and of these, thanks to the good offices of my friend, the Director, and of his staff, I saw many. It would have meant



little to me if I had seen the factory without the fields or the fields without the factory in their neighbourhood. For it is only in and through their organic interrelation that use and beauty can find their union.

Flax is the most aristocratic of our home-grown crops. Its many utilities and qualities are faithfully reflected in what it looks like through all the processes of conversion from field to bale. It is entirely without the bluey sheen of wheat in May and early June and I was baffled in defining my impression of its subtle and softly toned colouring. But I suddenly remembered a line of Coleridge describing a certain effect of sunset which Byron scoffed at as fanciful. Yet Coleridge in that line—"And its peculiar tint of yellow-green"—was accurately recording an uncommon but recurring colour-type of sunset. This is seen in English landscape only (so far as I know) in the field of flax just before flowering. It is a colour of such pastel refinement and delicacy; the yellow-green light is so subdued and the texture so silky, especially when the crop is growing evenly from the proper distribution of moisture after harrowing, that only by borrowing from the skies can it be described at all. The grace of line in the bent heads, a little fuller than that of the fritillary and absent from garden flax, contributed to a flawless memory of tone-value like none other in our England of the water-colourists. Later, other glories appear when the field is bluer than the Mediterranean and in the Baling Room where the bundles or

'pockets' are filed to be sent to Belfast for the spinning. The colour might then be called old gold but it is too soft for any metal. Or it might be compared with certain effects of Van Gogh but they again are too hard. The glow and lustre the bales give out are a kind of life-colour, and indeed this 'life' is a definite indication for testing the quality of the fibre.

Is there another crop of English earth which in the final count has such a multiplicity of uses? Uses from the finest cambric pocket-handkerchief of the long weft flax which takes fifty miles to the lb. of fibre to the rich oil that fats the cattle. I dwell upon this aristocratic quality of the field of flax for a reason the very reverse of 'picturesque'. Its singular beauty and the elect nature of the plant have consequences in the string of elaborate processes that are as practical as they well could be. Its virtue not only communicates itself to the workers in all stages of its preparation from field to yarn, but actually compels upon them a high standard of workmanship. Except at the cost of the fabric, this can never be evaded by mere mechanization. Wholly mechanize the flax industry and that virtue is withdrawn. The quality of the plant conditions a responsive workmanship in its handling and conversion by the worker.

These extend in a long chain from harvesting to the bundles of dressed flax made ready for the spinner. The crop is first pulled (not cut) by hand or machine, hand pulling being



(Left) Deseeded flax straw being spread before it enters the breakers. After passing through the breakers it enters the scutching (beating and dressing) machine where the shive or skin is removed. (Opposite) Sorting and testing rescutched tow (short flax) for grading

the much superior method. It is then stooked into aisles, carried, stacked and de-seeded. The seed either for resowing or cattle-feed is separated from the chaff which is itself a fodder. It is then tank-, dam- or dew-retted and gaited, chapelled or steepled in the field to be dried by the winds and bleached by the sun, ending its field-adventures by being hand-tied into sheaves.

The factory processing begins by deseeding and then breaking or scutching into the green or retted flax, the 'shive' or skin and core being burned or, as it should be, returned to the land. At this mill, the shive is used as a top-dressing on the little gardens under the mill-walls. The tomato plants are of superlative quality and productivity. The tow, either green or retted, is used for various fabrics. After the scutching, the sheaf becomes a strick that can easily be held in the palm of the hand, where it is dressed and evened by the fingers of the other hand. The stricks are then made up into bundles, graded and baled for transport to Ireland or Scotland for the spinning.

The green flax, mainly used for parachute harness, has nothing like the exquisite texture, buoyancy and creamy-buff colour of the dressed retted flax. Brunhilde's hair would have seemed coarse beside it.

There is a primary factor to be noticed about this series of chapters which begins and closes the development of crop into bale. The first is the integration between field and workshop. It is enforced by the curious similarity in handling and motion between the hand chapelling or steeping out in the fields and the hand dressing in the mill. Of old, of course, all the processing and pulling was by hand, as it used to be up to quite recently in Belgium and Ireland. But I am speaking of the mass production of flax for war needs and in mechanical conditions. Not even in the most machine-made Utopia of the modern planner can flax ever be victimized to the automatism that has already been the fate of its sister, wheat. Only a limited mechanization can be applied to it. Only up to a point can the crop in the field be severed from all association between the field and the factory. If the crop be flax, nature cannot with the best will of the mechanists be turned out of the factory. They have, of course, tried to do it; but they have failed.

The particular 'factory' of the North Wiltshire Downs to which I paid some memorable visits was certainly odd. The people in it moved in a leisurely fashion; they conversed as at a social gathering; there was no shouting above the clang and roar of machines; they

remained individuals; there was nothing automatic in their actions; no hurry; no regimentation and no clock. The whole place seemed rather a number of workshops blended into one than that modern Church of Industry whose altar is the assembly line.

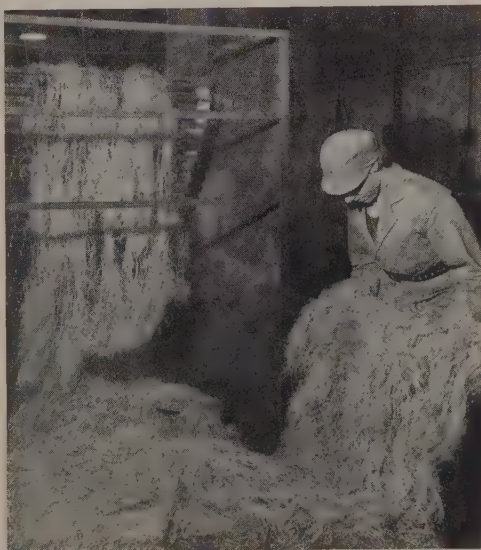
The key to the whole was the scutching room. Here, at the end of the scutching machines, ran a line of Belgian hand-scutching timber wheels—Belgium being the country where flax-craftsmanship produces fibre of the highest possible quality. With this difference, that a small motor had been attached at the end of the line to set the wheels in motion and a small electric power plant to carry off up a shaft the dust which impairs the health and chokes the nostrils of the hand-workers in Belgium and Ireland.

I regard these two very modest and unobtrusive mechanical appliances as of really supreme importance.

In the first place, they did not encroach to the smallest extent upon the free display of the hand-skills. On the contrary, they may be said to have furthered them. They relieved the workers of the toil of setting the wheels in motion and of the discomfort of breathing in the fine dust.

Secondly, the electric motor was noiseless, the petrol one almost so, while the electricity was generated from local resources.

Lastly, there have been analogies to this local use of electric power elsewhere. The miller of Church Minshull in Cheshire once used one wheel for grinding and the other





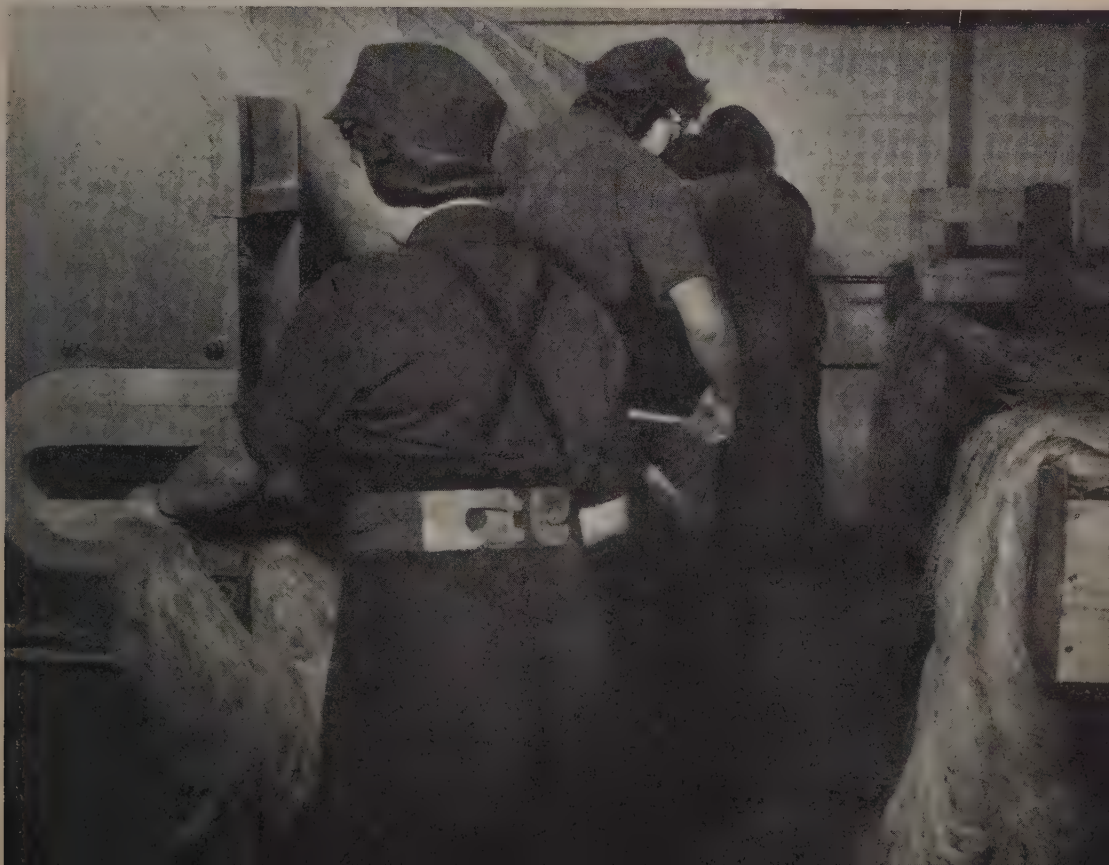
for generating power for the village, and the same device was adopted by the mill on the Kennet at Kintbury near Hungerford. This supplied both meal and current to the whole village. This true economy and proper adaptation of modern knowledge to human needs was killed by the grid system, and the villagers now pay just double what they did when the miller generated their electricity. It has been wisely suggested that both local charcoal and wood shavings could be used for small gas engines where water power was not available. When the Act for the electrification of the Highlands was being drafted, an alternative proposal was submitted to the Committee which reported on the Bill. It suggested the use of local power for local needs, as proved so successful and economical at Church Minshull and Kintbury, and is so at this Wiltshire Flax-Mill. The suggestion was turned down as 'impracticable'; that is to say, as displeasing to the industrialists who

wanted heavy industries.

But I have no doubt that the problem of mastering and adapting modern machinery to the service of mankind in general, and to the purpose of fostering the revival of local communities in particular, could be almost entirely solved by exploring and developing this principle of the small machine operating, where possible, by local power. Otherwise, the machine can and does exercise a dangerous and deleterious influence, both upon human health and human psychology, particularly in its frustration of the normal human skill-interest and pleasure-interest in skilled work that is no longer done by man, but by the machine. It is the small machine, not the great, that delivers man from what has been called "the disgraceful sin of being bored".

I saw girls scutching the flax upon these hand-wheels and noticed something which gave me the clue, not only to what kind of

(Opposite) *The girl at the top has a strick of green or natural flax—scutching from the green straw as it comes from the grower—which she is twisting before it is put into a pocket, or bundle, of stricks. In the lower picture the flax is being taken off the machines to be hand-dressed, sorted, twisted and put into the pockets, which then go to the store for final grading. (Below) Hand scutching on Flemish wheels. Much skill is required for this operation*



factory this was, but to the philosophy of life underlying its operations. This was nothing more than a peculiar swing and curve of the arm when the strick of flax was applied to the ends of the wooden lathes attached to the wheels. Some of the girls were doing their scutching better than others; one was doing it superbly. I could not but link this in my mind's eye with two other things I had already seen—the curve of the flax-heads in the fields and a magnificent round stack in the factory yard, crowned with a finial at its apex. Actually, this was the work of one of the best thatchers in Wiltshire whom the Director had procured. Even in spreading the flax to feed the scutching machine, a craftsmanly grace and dexterity are necessary.

But the culmination of this strange and beautiful affinity between the way the flax grew in the fields and the way the girls were handling it was when I saw two girls dressing the flax. One of these was the champion at the hand-scutching. I do not pretend to be able to give an impression of this carding of the tresses of the flax between the fingers. The loose gossamer-like strands are teased out, and there is a special turn of the wrist and toss of the arm when they rejoin the cascade of lustrous flax fibre flowing from the other hand. The levelling and evening are done by a caressing motion of the fingers. All I can say is that the action or series of actions was like a figure on a Greek vase. *Noblesse oblige*: the flax itself ordained this art and the genius of the Director had transformed the factory to a gallery where girls made gestures as in a sculpture or painting and where quality and skill were the final arbiters. The essence of machine-work is that each motion is the same and invariably repetitive. But in the hand-scutching and dressing there is a hierarchy of skill and the greater the skill, the finer the grace. The machine was but the base of the pyramid and the workers who prepared the fibre were conditioned by the nature of the material in which they worked. "The art itself is nature." This is the actuality of every artistic process, whether the example be Michael Angelo working his stone or these girls working the flax.

It is almost superfluous to add that this factory turns out some of the finest flax in England.

The seal was set upon this remarkable experience of a factory in process of redemption by what I witnessed the next day. This was the gaited, steepled or chapelled (from the French *capellier*) flax being turned to dry and bleach by the factory girls up on the high downs. For the Director, being a husbandman himself, is fully aware of the organic need

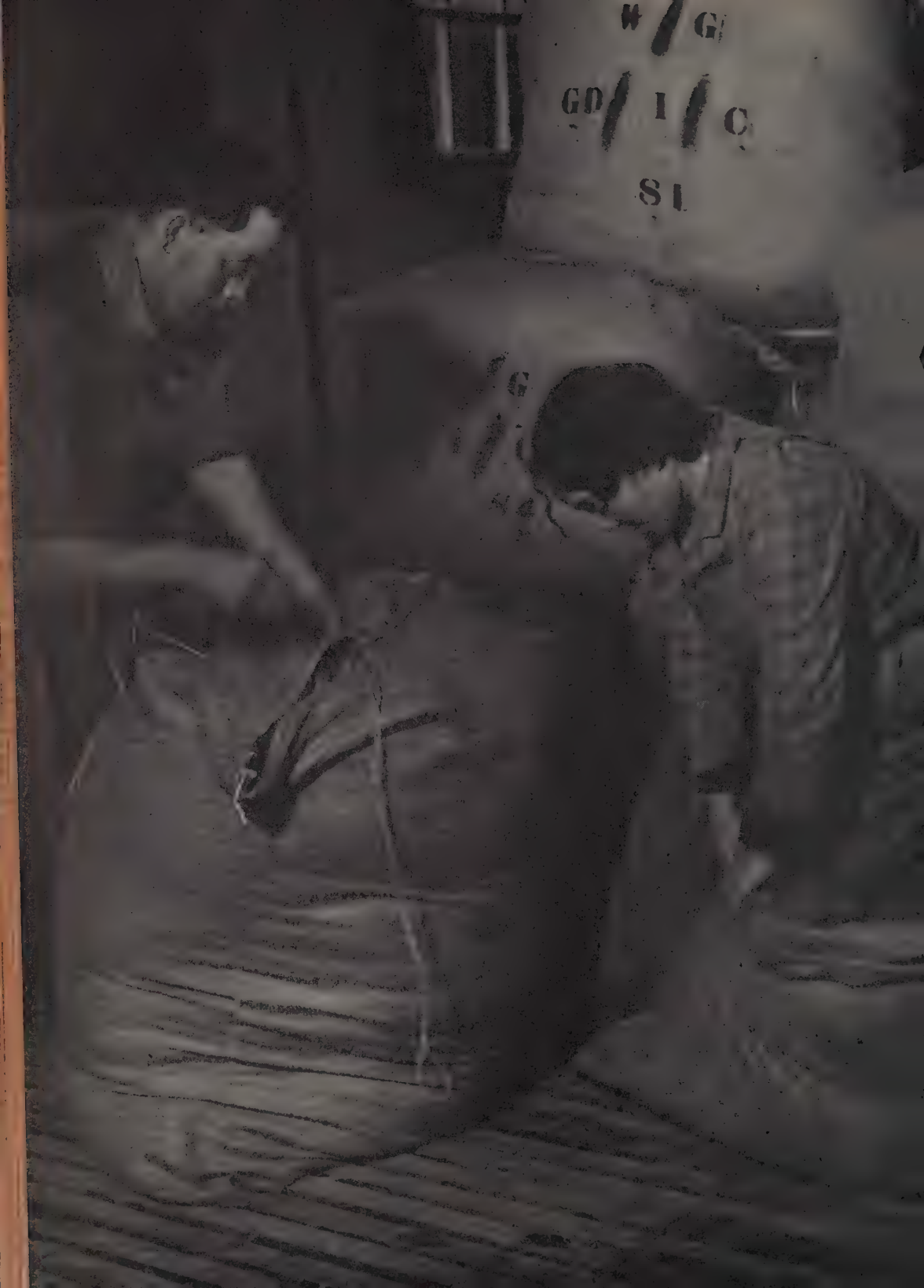
for the correlation between factory and field. He gets the workers out into the fields as often as he can, not only for their *health* but the *wholeness* (the same word) of this essentially country industry.

The steepled flax is set up in parallel lines of sheaves or 'beats', exactly as in the corn-fields with the difference of the superior elegance of each steeple. The stem or column is very slender and is maintained in its upright position by the butt being spread out fanwise in a wide skirting. The object of this is to 'cure' the flax with sun and air, exactly as a side of bacon is cured in the smoke of the hearth. The chapelling takes a couple of days and then, after tying, the beats or sheaves are 'barded' or stooked for a fortnight, if the weather is favourable, to complete the curing. The barts are made twenty feet long. Both barting and steeping are, if well and truly done, works of art. Never does this superior plant fail to look the aristocrat it is. And when it is thus seen in long aisles of parallel piers resting on these circular plinths of its own straw on the summit of windy downs that look from the bluffs of Oare and Martinsell north-west to the purple oolite ranges between Chippenham and Malmesbury, and south again to the dim cloudy escarpment of Salisbury Plain, it would seem that our English earth has nothing to show more fair.

But something more there is: the girls moving between the aisles in bright tops and dungarees and turning each steeple so that wind and sun can reach the straw. The action has the elements of ritualism and must be performed just so. Their foreman (like the 'leader' or 'lord' of the old sicklemen or scythemen) achieved this inevitableness with the casual easy command of the true craftsman. The steeple is bent over the knee, the skirting shaken out and deftly turned and a stem twisted round the top of the steeple before he passes on to the next. So little more there was to do—a slight formalizing of the scene, a closer pattern and I might have been looking at a complete picture by Calvert, *The Cider Feast or Sheep Shearing*. In these the workers are celebrants and the task is a form of worship. I could not have believed that I should in this age have witnessed a scene of timeless social husbandry like this. For true husbandry is immemorial by its very nature, because it is a fulfilment of the natural law. To trample it, to deride it, as it is now the

Final sorting in the flax store. A keen eye and sense of touch are required for this work. Weathered and damaged flax must be removed and the finer separated from the coarser flaxes





W / G

GD / 1 / C

SL

fashion to do, is an invitation to catastrophe.

What the Director of this flax-mill is accomplishing is a bridging of the great gap in continuity between past and present. He has begun to restore that pattern and interplay between man and the earth which are indispensable to the vitality, and indeed the survival, of the social organism. To apply the ideas and methods of industrialism to farming, and to the industries that are interlinked with it, is necessarily destructive of all pattern and rhythm and so of quality.

The magnitude of what is being achieved in the flax industry of North Wiltshire may be partly measured from the fact that this factory is as bound to mass production as any other. The urgent demand for the fabrics of flax to meet the insatiable requisites of war prevent the development of a true organic local industry that might well be a variant in modern terms of the medieval and Tudor weaving industries in the cathedral and market towns of a self-sufficient past. The Director has, in addition, to cope with the ignorance which the violent break with our rural past effected by the Industrial Revolution entails; nor is that ignorance by any means dispelled by the fact that all agricultural and rural operations are controlled and managed by the urban bureaucracy.

These impediments have been accepted and are being moulded, so far as circumstances will allow, to something much more far-sighted than the temporary expedient of mass production. With the conviction that all genuine husbandry and craftsmanship are an art like any other, the Director is using the means to his hand, the very machines themselves, to build up a hierarchy of function of which mechanical work shall be the basis and the hand-skills the ultimate purpose. He regards the machinery as a scaffolding to this exalted end, a scaffolding that he may one day be able to cut down to its minimum.

This is surely the beginning of man's mastery over the machine, without which no civilization can or deserves to survive. It means putting the machine in its right place as the servant both of humanity and craftsmanship. To attempt to abolish the machine (even if it were desirable) is as Utopian as the paper-paradises of the mechanists. In the present condition of society, in which mass production, cheapness and profit have submerged the older principle of use-and-beauty, the real task of the future is the conquest, not of nature, which is impossible in

the goal and disastrous in the attempt, but of the machine which has been used as the instrument of that conquest. The Director of the Wiltshire Flax-Mill has perceived that the flax plant itself is a means to this end, because it insists upon quality in its growing and cultivation, and quality in its manipulation through the workshop. The function of the machine is to be ancillary to craftsmanship: the best of the Lincolnshire farmers use the tractor as supplementary to horses. It is when the machine encroaches upon the domain of the craftsman that its social and industrial repercussions become hostile to human welfare. It is when the purely quantitative assessment is broken down and the machine subserves the higher functions of a recovered pattern of life and work that the age of cheapness will be superseded by the age of quality.

The idealists of the 19th century applauded the introduction of the machine into industry as a means of eliminating drudgery. Our own century, made wiser by experience, has come to see, at any rate in glimpses, that uncontrolled mechanization imposes a drudgery of its own, worse than the most toilsome of former hand labours because it frustrates the natural skill-hunger of the normal worker. But these earlier idealists were right in this sense, that it is the proper business of the machine to reduce the element of drudgery in all work. But drudgery ceases when skill, and therefore interest, enters into the work. They were unable to foresee that the effect of the machine would be to destroy the skill and interest value, not the drudgery. That this is true has been unconsciously recognized by the workers themselves in this flax-mill. They have come to prefer and aim at the hand-skill over the automatic labour. If this principle were applied to all industries connected with agriculture, and the economic one of the fair price were to be firmly established, it would not be long before the flow of the tide from workshop to factory, and from country to town, would be reversed.

Thus was the continuity between my own former journeys into Wiltshire preserved by my latest one into a new world. In my own past I was wholly preoccupied with the evidences of past cultures; in my later life I was concerning myself with what is building on the worn surface of the ancient Downs. So, when I see the strick of flax hanging in my museum, memory of the past and hope for what is to come are made one. "In these Wessex nooks", wrote Thomas Hardy in *Far from the Madding Crowd*, "the busy outsider's ancient times are only old; his old times are still new; his present is futurity."

Baling the finished and graded flax, which is now ready for shipment to the spinner

Divided Italy

The Interaction of Politics and Geography

by C. V. WEDGWOOD

OF all European countries Italy affords the strongest proof of the influence of geography on political history: an influence as consistent as it has been unhappy. A narrow peninsula, exposing more than 2500 miles of coast, with a mountainous backbone whose spurs segment the country, Italy is bounded on the north by the formidable semicircle of the Alps, through which the five great passes, outspread like the fingers of a hand whose palm is the Lombard plain, converge towards the fertile valley of the Po.

Except during those centuries when she was herself mistress of Europe and queen of the Mediterranean, Italy has always been exceptionally vulnerable, nor has she, since the collapse of the Roman Empire, restored the conditions which once made her secure. Those conditions were internal cohesion and the command of the sea. Both were essential to the maintenance of Italian greatness; both postulated the triumph of man over his geographical surroundings.

The Romans' insistence on roads grew out of the conditions of their native land. An ill-roaded Italy—so later centuries were to show—is a divided Italy, and if the Romans gained domination of the entire peninsula as soldiers, they maintained it as engineers. It was no less important for them to eliminate any rival maritime power in the Mediterranean. *Delenda est Carthago* ("Carthage must be destroyed"),—and accordingly it was.

These conditions—internal cohesion and the mastery of the sea—fulfilled, Roman Italy, like imperial England, could afford to build up a complex urban civilization, and to breed a population which depended for food on the granaries of other lands, of North Africa in particular. Transport and communications were organized with a wonderful efficiency, and the growth of great cities was made possible by bringing water long distances by aqueduct from the hills to the towns of coast and plain. The barbarian invaders dislocated the road system, destroyed the aqueducts, and—when the Vandals swept into Africa—cut off the supply of foreign corn.

Italy disintegrated. Thirteen hundred years before Metternich coined his contemptuous phrase, she had degenerated into a "geographical expression".

With no fleet to defend her coasts, with no organized armies to man the Alpine passes, Italy emerged into medieval Europe an open prey to every marauder, tempted by her softer climate, her vines and olives, or the legend of her riches. Her past greatness haunted her. Once her cities had been so rich that a group of inexperienced barbarians, setting forth to plunder Rome, had—it was averred—mistaken the little town of Lucca for the imperial capital, unable to believe that a city greater and more wealthy could exist. But a legend yet more dangerous than that of her wealth haunted Italy from the first sack of Rome by Alaric in 411 to the last sack of Rome by Charles V in 1527, and even later.

Napoleon, placing the iron crown of Lombardy on his head with the words "*Dio mi la dona. Guai a chi la tocca!*" ("God gives it to me. Woe to him who touches it!") is but the romantic expression of that legend on the threshold of the 20th century, and we hear its echoes today mingling confusedly with strategic arguments for and against the bombing of Rome.

For Rome is no ordinary city and something of her aura irradiates all Italy. To the man conscious of Europe's classical heritage she must always be in Byron's phrase "O Rome, my country, city of the soul . . ."; and the believing Catholic cannot but cry out, with the anonymous medieval poet, "O Roma nobilis, Orbis et Domina, O noble city of Rome, Queen of the World . . . hail through all centuries".

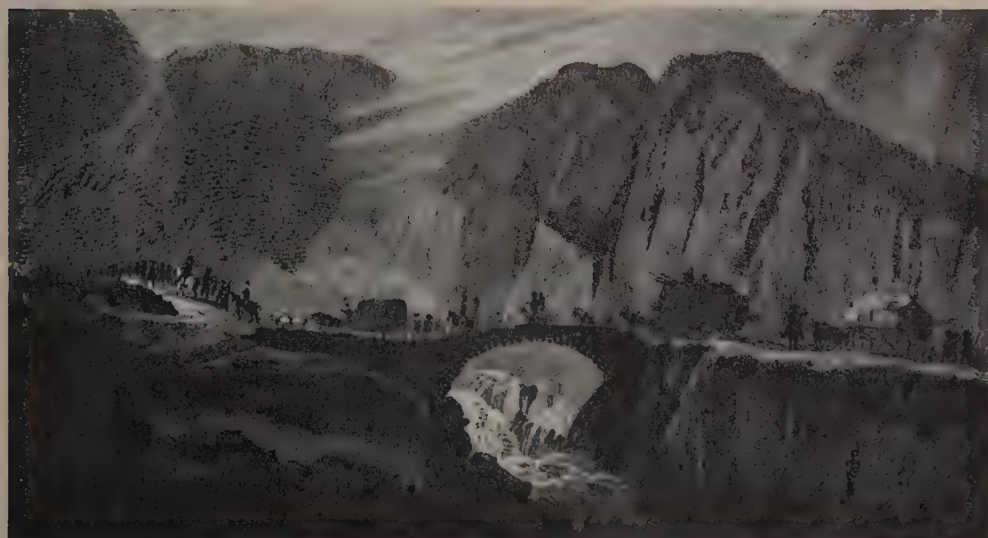
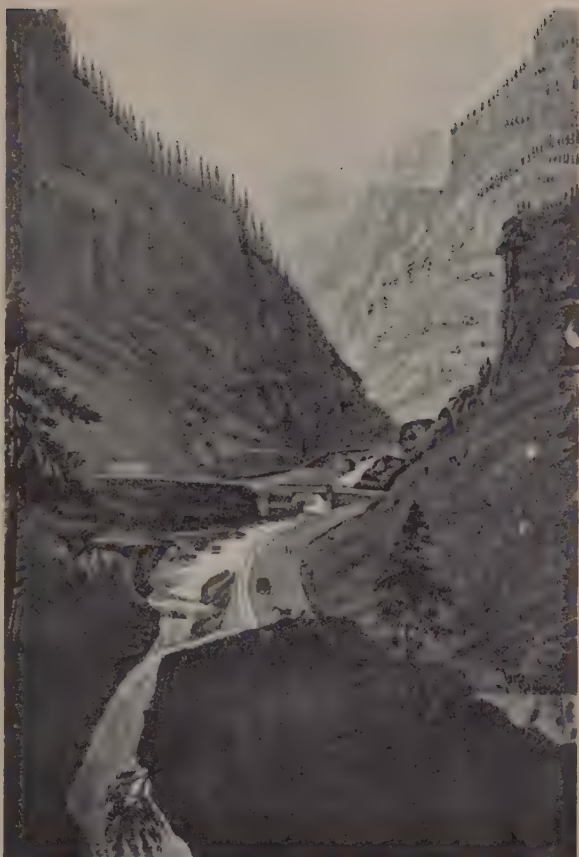
But to the materialist and the rabid Protestant her ruins are meaningless and her religious significance abhorrent. In the 17th century Hobbes elucidated the matter with his famous description of the Catholic Church as the ghost of the old Roman Empire with the Pope "sitting crowned on the grave thereof".

Yet the Church inherited only a part of the

legacy of imperial Rome, which was at the same time appropriated by barbarian kings, who in the person first of the Frankish Charlemagne and later of the Saxon Otto the Great, carried on the title and the idea of a Roman Empire into the Middle Ages. Italy's political development was thus paralysed by the dead hand of her past. Rome, theoretically the capital of all Christendom, laid Italy open to unceasing interference from without, while the German kings who had inherited the imperial idea would never wholly relinquish, and could never wholly realize, their territorial claim to all Italy.

Political divisions which ran counter to all the reasonable dictates of geography were often the result. The partition of Europe between Charlemagne's sons, for instance, was made on the fantastic principle of including Rome and Aachen (Aix-la-Chapelle) in a single state. More serious for Italy was the desperate

Eighteenth-century views of two famous Alpine Passes: (right) the Simplon and (below) the St Gothard. The Alps were by no means an impenetrable barrier between Italy and Europe. Although difficult, they were practicable for primitive wagons and horse and foot soldiers





(Left) *The Appian Way, the greatest of the great trans-Italian roads which bound the capital city to the provinces, ran from Rome to Brindisi. (Below) The heart of Rome: the Vatican, about the middle of the 17th century. (Opposite) The Barbarian invasions which destroyed the Empire were a slow process. Clashes, such as that depicted by the 19th-century artist Paul Ivanovitz, occurred in the early stages, on the frontiers. Later the Goths acquired knowledge of Roman civilization and arms which they put to their own use*

Rischgilt Studios



attempt to hold a strip of country running from Rome north-eastwards to Ravenna, the administrative capital after Rome's decline, as a stronghold of Romano-Byzantine authority. This, the so-called Exarchate, formed the ground-plan of what were later to be the Papal States, a kind of anti-national *cordon sanitaire* between north and south which hindered the growth of united national consciousness.

Add to these political complications the exposed geographical position of Italy, and the repeated invasions which swept over her for more than a thousand years after the collapse of the Roman Empire are explicable enough. Each important maritime power in the Mediterranean coveted her ports and bases; for this reason Sicily was overrun by the Saracens, who also established themselves on the coasts of the mainland. For this reason the French and the Spaniards bitterly contested possession of Southern Italy and Sicily. Yet, although the kingdom of Naples and Sicily in course of time and under

Spanish rule became the largest united block of territory in the peninsula, it was only intermittently successful in defending even its own shores, and up to the 17th century marauding corsairs raided the coastal villages and carried off Italian boys and girls to the slave markets of Constantinople and Tripoli.

More important as naval powers in the Mediterranean were the two maritime republics in the north, Genoa the remnant of a Roman colony, and Venice which had been founded in the lagoons by fugitives from an abortive invasion of the Huns. Yet these powerful cities, although they had navies strong enough to defend their own shores, to secure their trade routes and to occupy intermittently—and with a good deal of fighting with the Turks—most of the strategic points in the Mediterranean, never successfully established the immunity and security of all Italy. After all, they did not particularly wish to: they were frequently at war with their sister Italian states.

As for the undefended Alps, with their

Rischgitz Studios





converging passes, these were no more than permanently open sluices through which conquerors or invaders streamed into Italy. The barbarians—Goths, Huns, Lombards—came from the east and surged into Italy by way of Laibach, over the Julian Alps, down on to the repeatedly burnt and plundered city of Aquileia; thence usually they struck south-west for Bologna, the passage of the Apennines and the tempting uplands of Tuscany. The last and the most culturally destructive of these conquering races, the Lombards, settled at length into three kingdoms, with capitals at Pavia, Spoleto, and Beneventum. The district round Pavia was, however, alone to perpetuate their name.

After the racial invasions came the political invasions, and now as the centre of gravity in European politics shifted, so the danger point

shifted round the half-circle of the Alpine passes. Charlemagne came in by the Mont Cenis and the Great St Bernard, Otto the Great and all the German kings after him by the Brenner, but with the decay of the German and the growth of the French monarchy the danger zone slid back to the Savoyard Alps. For the better part of two centuries, the 16th and 17th, Spain and France were to contest the domination of Europe. Italy, alternately wooed and invaded by both, was to be for much of that time both the pivot and the battle-grounds of their war, and such key points as Rivoli and Pinerolo, Susa and Casale, and the Val Telline were bartered by treaty or intrigue, and bought or sold at fearful sacrifice of lives.

During all these centuries no single power had arisen in the peninsula strong enough to impose itself upon the others. The separatism of small, jealous, quarrelsome city-states and the individual pride of ruling dynasties had been abetted by those powers whose interest it was to keep Italy divided, and the natural features of the country had done the rest. It was long enough before even a dynasty like the Medici of Florence, helped, as often as not, by one or other of the rival foreign powers, managed to swallow up one by one the independent hill cities of the surrounding country into what became the Grand Duchy of Tuscany. The future did not lie with this bloated and decrepit power, a satellite of the Austrian Habsburg. It did not indeed lie with any of those short-flowering, brilliant Renaissance states, but with the little northern Duchy of Savoy.

The reason was plain. Savoy controlled the Mont Cenis and the Great and Little St Bernard. By the opening of the 16th century a succession of intelligently predatory feudal counts had extended their tiny original domain between Mont Blanc and Geneva to include most of the strategic positions on the way from France into Italy—Aosta at the foot of the St Bernard, Susa and Pinerolo at the foot of the Mont Cenis, Rivoli, Turin and Casale on the highway into Italy. They had become internationally important. Several Kings of France, an Emperor and a King of Spain offered their daughters as brides to successive dukes to cement a valuable alliance. Savoy, astride the Alps, had put herself, in every sense, on the map.

A detailed map of Italy and its surrounding regions, including parts of Switzerland, France, and the Balkans. The map shows Roman provinces such as SWITZERLAND, LOMBARDY, VENETIA, ETRURIA, TUSCANY, APULIA, and SICILY. Major cities like Rome, Milan, Venice, Florence, and Naples are marked. The map also depicts the Tyrrhenian Sea, Adriatic Sea, and Mediterranean Sea. A scale bar indicates distances in miles (0, 50, 100, 150). A legend at the bottom left identifies land elevation (1500-6000 ft and over 6000 ft) and Roman roads.

This map of Italy illustrates the Roman road network, with major roads highlighted in bold. Key geographical features include the Alps to the north, the Adriatic Sea to the east, and the Tyrrhenian and Mediterranean Seas to the south and west. Major cities such as Rome, Milan, and Naples are marked, along with numerous Roman provinces like Venetia, Aemilia, and Sicilia. A legend in the bottom left corner identifies land elevations and Roman roads, while a scale bar in the top right corner provides distances in miles.

Legend:

- Land 1500-6000 ft. (stippled pattern)
- Land over 6000 ft. (cross-hatched pattern)
- Roman Roads (solid line)

Scale: 0 to 150 Miles

This map of Italy illustrates the Roman road network, with major roads highlighted in bold. Key geographical features include the Alps to the north, the Adriatic Sea to the east, and the Tyrrhenian and Mediterranean Seas to the south and west. Major cities such as Rome, Milan, and Naples are marked, along with numerous Roman provinces like Venetia, Aemilia, and Sicilia. A legend in the bottom left corner identifies land elevations and Roman roads, while a scale bar in the top right corner provides distances in miles.

Legend:

- Land 1500-6000 ft. (stippled pattern)
- Land over 6000 ft. (cross-hatched pattern)
- Roman Roads (solid line)

Scale: 0 to 150 Miles





General view of Turin, showing its situation at the foot of the Alps on the banks of the Po. Although the city is of more ancient foundation, its noblest buildings are baroque and date from—

The little duchy had certain psychological advantages too. The noble baroque streets of Turin tell—or told—the story of this late developing state into which Renaissance civilization penetrated so long after the rest of Italy. The greatest treasure of the Turin picture gallery, Van Dyck's superb equestrian portrait of Prince Thomas of Carignano, the swashbuckling younger son of Duke Charles Emanuel from whom the present reigning house of Italy is descended, repeats the same story. But if Savoy had not partaken of the full cultural splendour of the Renaissance, she had also escaped the crippling influence of the Roman legend. Her rulers and her nobility were not troubled with visions of a past which, for them, had hardly existed. Savoy lived for the future; she was always, emphatically, "on the make".

The Napoleonic storm, which broke down so many ancient boundaries, breathed a new life into Italy, but the peace-makers at Vienna, while they rewarded the Duke of Savoy (now also King of Sardinia) with the gift of Genoa, presented Venice and Lombardy to Austria

and reconstituted the reactionary Spanish-Bourbon kingdom of Naples under the name of the Two Sicilies. The young ideas of progress and liberalism which were stirring throughout Europe seemed doomed to extinction in Italy; and with them the hope of national unity.

* * *

It was just at this time that Camillo Cavour, younger son of a Piedmontese nobleman, was growing up in Savoy, under a government which, if hardly progressive, compared favourably with that of the rest of Italy. Cavour himself, destined for the army, resigned his commission out of distrust of the monarchy, and thereafter spent some years managing his father's estate at Leri. Here he experimented with new agricultural methods and founded the Agricultural Society of Piedmont. He must have had something of the visionary, as all creative statesmen have, but his visions were disciplined by unusually prosaic common sense. He had been trained as an engineer, and was fully conscious of the possibilities



Rischgitz Studios

—the emergence of Savoy as a minor international power in the 17th century. (Below) Camillo Cavour. Born in Turin in 1810, the architect of Italian unity



Rischgitz Studios

latent in the recent invention of the steam-engine and the improvement in methods of road-building. These developments perhaps more than anything else were to make possible the ultimate cohesion of Italy.

The year of Revolution, 1848–9, saw the failure of revolt in the South and the successful demand for a constitution in Savoy. But it saw also the shattering defeat of the Savoyard army by the Austrians at Novara and the abdication of the King Charles Albert. Great as were the hopes entertained of his successor, Victor Emmanuel II, the outlook for Italian unity was not particularly promising when in the following year Cavour declared in the Parliament house at Turin the necessity of making Italy into a single nation and the mission of Savoy to achieve this task.

During the next decade Cavour, as the chief minister of the crown, set himself to consolidate and stabilize the finances of Savoy, to improve the army, agricultural conditions, education, transport—to make Savoy in fact the model of the progressive liberal state,



Rischgitz Studios

Turin, The Palazzo Madama, the medieval castle of the Counts of Savoy, which was modernized in the 17th century for a princess of France (her official title 'Madame') who became Duchess of Savoy. (Opposite, top) Venice in its autumn glory: the investiture of Doge Aloysius Mocenigo in 1763; (bottom) Venice in its agony. The revolt of 1848-9 failed; Venice held out heroically under its great leader Daniele Mannin, until cholera and famine forced its capitulation to Austrian arms

in noble contrast to the brutal military repression in neighbouring Austrian-controlled Lombardy, to the disorder and reaction of the Two Sicilies—where the Neapolitan prisons were even then arousing the righteous denunciations of Mr Gladstone—and to the senile and obscurantist administration of the Papal States, where vaccination and street lighting were alike forbidden as dangerous liberal innovations.

The rest of the story is well known. While Cavour, the practical statesman, worked at the exacting task of internal organization, at the same time steering Savoy into the main current of European politics and introducing the future unity of Italy as an international issue, Garibaldi, the inspired adventurer, was recruiting an Italian legion abroad. Cavour's

diplomacy secured the support of Napoleon III, with whose help Savoy entered into war with Austria. After French victories at Magenta and Solferino had all but driven Austria out of Italy, Napoleon coolly betrayed the alliance for the acquisition of Nice and Haute Savoie. (Eighty years later Fascist Italy avenged on the corpse of the Third Republic the wrong done to Liberal Italy by the Second Empire. History is sometimes like that.)

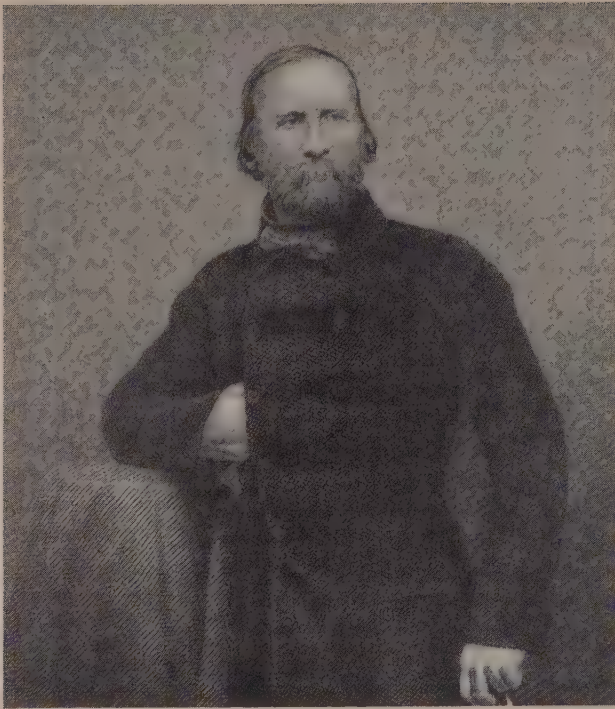
In spite of Napoleon's desertion, which enabled Austria to retain Mantua and Venice, the greater part of northern Italy—including Parma, Modena and Tuscany—had thrown off their respective ducal rulers (Austrian puppets) and acclaimed Savoy as the leader of a united Italy. Lombardy, ceded to



Engraving - 18th Century



Rischgitz Studios



Rischgitz Studios

Giuseppe Garibaldi, the liberator of Italy. His Italian legion raised abroad, landed from two British warships at Palermo in May 1860, crossed to the mainland and overthrew the decadent Kingdom of the Two Sicilies. His later attempts to take Rome were, however, unsuccessful

Napoleon III by the Austrian Emperor, was by him in turn ceded to Savoy. Meanwhile in May 1860 Garibaldi, with his band of patriots recruited abroad, his famous Thousand, landed from two British warships in Sicily and seized Palermo. Following in the footsteps of so many raiders and conquerors—Saracens, Normans, Spaniards—the liberators came at last, crossed the straits of Messina, and entered Naples in triumph. Government troops with Papal help rallied and held him on the line of the Volturno, but once more Savoy intervened, and the Kingdom of the Two Sicilies with the greater part of the Papal States joined the new Italian kingdom.

There remained only Mantua, Venetia and the city of Rome itself. Garibaldi, characteristically, determined to repeat his first glorious exploit for the redemption of Rome. Cavour, with the wisdom of the true diplomat, believed that the situation would ultimately develop towards its own solution. He neither lived to see it do so, nor to prevent Garibaldi (if anyone could have prevented

him, which seems doubtful) from smirching his glory with two ill-considered and unsuccessful attempts to conquer Rome. But Cavour was in fact right, for Austria withdrew from Mantua and Venetia after her defeat by Prussia in 1866 and the Pope was driven from Rome into the fastness of the Vatican four years later when the Franco-Prussian War caused the withdrawal of the French garrison on which he depended. A plebiscite decided by 133,681 votes to 1507 for amalgamation with the kingdom of Italy, and Rome became at last the capital of a nation.

Unhappily, although the courage, tenacity and genius of a few men may alter the fate of a people, it takes more than a single generation of men—even of the calibre of Cavour—to modify the effects of a 1500-years' inheritance of history. Italy's geographical position and her own weakness by sea and land have left her with no political tradition save that of a grasping opportunism, backed still by the dangerous legend of Roman grandeur. As a nation she has still to find herself.



Paul Popper

ome, the capital of a modern nation. Architectural schemes to rebuild among the ruins of a too glorious past modern city, worthy of its position as capital, have not been icholly successful. The architectural style favoured modern Italy, if impressive, lacks individuality: this might be Dusseldorf. Italy has still to integrate her past with her present



Winter in the Cairngorms

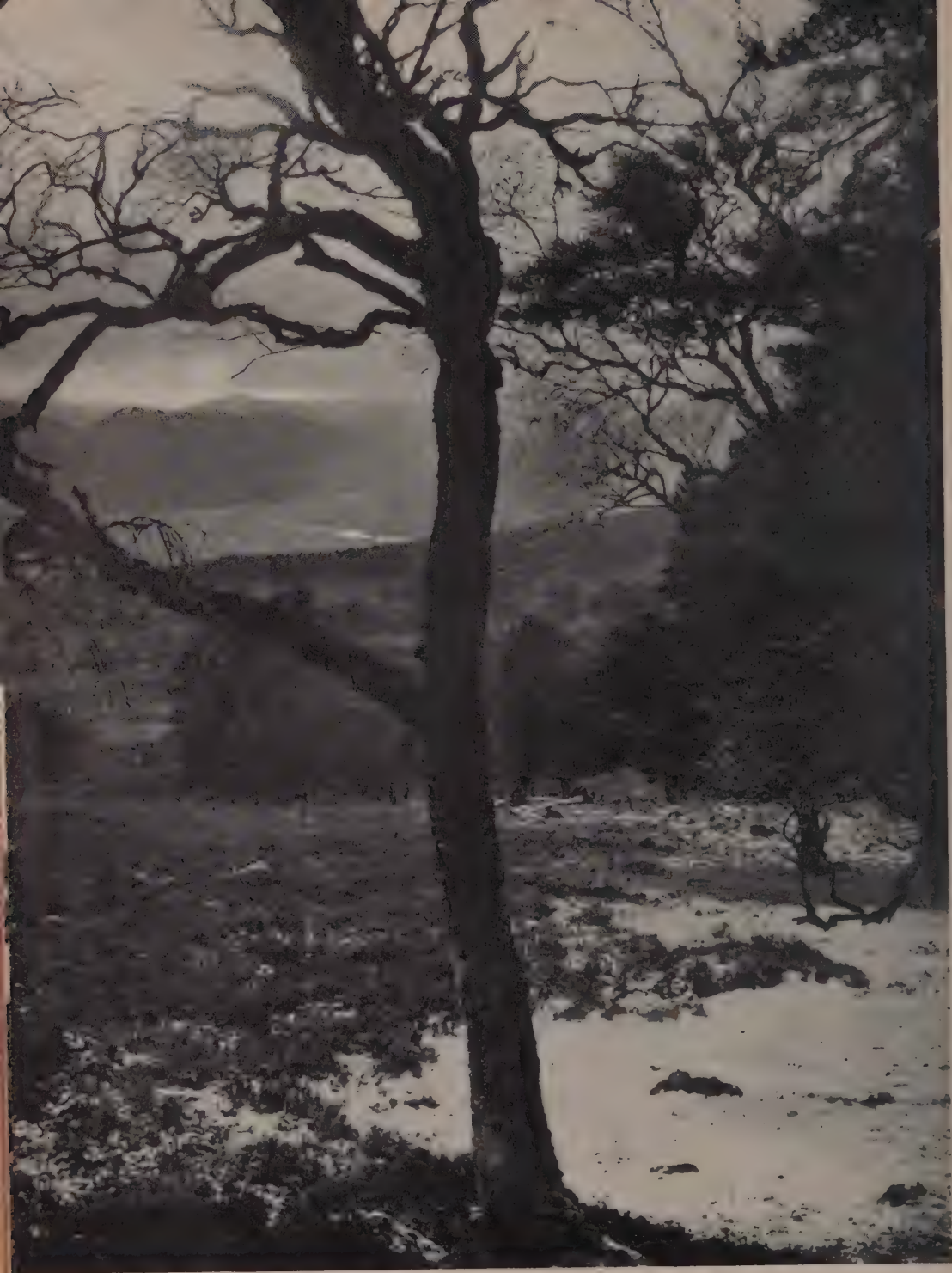
Notes and Photographs by F. S. SMYTHE



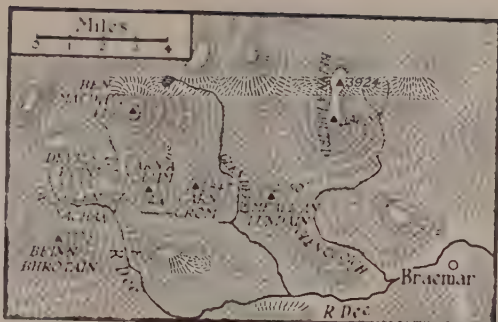
In a normal winter the high Cairngorms with their austere snow-clad hills, swept with biting winds and blizzards, remind one of Greenland. The photograph above was taken in October from the south-east shoulder of Ben Macdhui, looking south-west over the sun-lit ridge of Carn a Mhaim to the Devil's Point and the twin summits of Beinn Bhrotain.

The lower photograph was taken in Glen Quoich in the once great Caledonian Forest, remains of which are still to be found at heights of 2000 feet and over. Unfortunately deer, by eating the seedlings, prevent the pines from perpetuating themselves. In the background rises the snow-clad south top of Ben a Bhuird. Opposite is a view taken from the plateau of Ben a Bhuird on a calm November afternoon looking S.S.E. across the Cairngorm ridges to the shapely summits of Ben a Ghlo, 19 miles distant



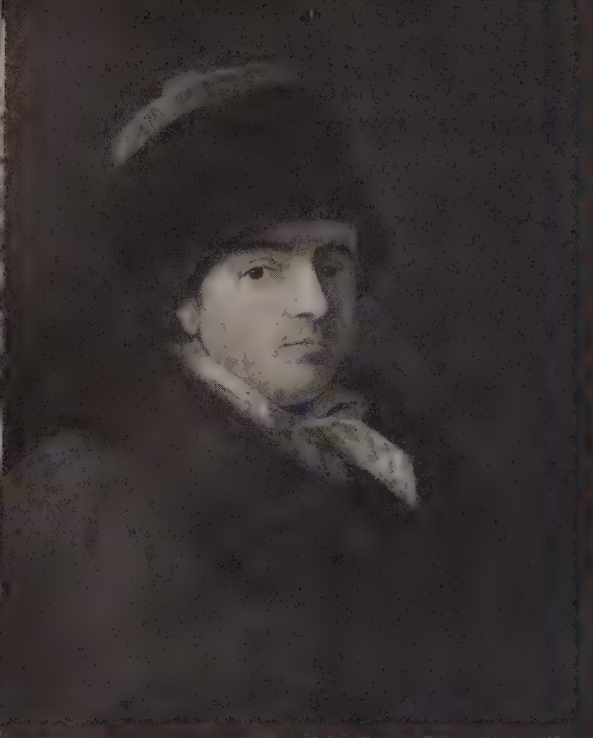


Deeside is renowned both for its salmon and for its tranquil fertility: (opposite) the low November sun lighting the Dee where it bends past Braemar. (Below) The view from Carn Crom looking across Glen Derry to Meall an Lundain. 'Sastrugi', or wind eroded, snow bears testimony to the high winds that constantly sweep the Cairngorms in winter



Stanford, London





The Canadian Artist and His Country

by GRAHAM MCINNES

Mr McInnes, a former Lecturer on Art at the University of Toronto, has contributed many articles on Canadian Art to periodicals in Canada, the U.S.A. and Great Britain. He is now producing art and industrial films for the National Film Board of Canada

In Europe the land is tamed; man has imposed his will upon it for thousands of years. In North America the land still dominates mankind. "Art is eternal," wrote Delacroix, "yet it wears the dress of its century." He might have added that it wears also the dress of its country. This is particularly true of the

art of new lands: of Canadian art, it is basic.

In Canada the humid heat of summer succeeds a temperature of twenty degrees below zero. Vast mountains, great plains and inland seas lie across the lines of communication. Between settled areas the harsh mass of the Laurentian Shield—the oldest known rock in the world—throws up great barriers of granite. Distances are continental: 1400 miles from Montreal to Winnipeg; 1600 miles from Winnipeg to Vancouver; 1500 miles from Edmonton to Dawson City, Yukon Territory; 3400 miles from ocean to ocean. The Canadian, turn where he may, encounters nature in the raw: his is consequently a landscape art. The land, the background, is all-powerful as an artistic inspiration.

The story of Canadian art is the story of a struggle with geography, and the Canadian artist might well say of his great brooding background, as Catullus did of his mistress, *Odi et Amo* ("I hate, I love"). The first French settlers, as was only natural in a strange country, carried with them the art forms of France of the late Renaissance. In the portraits of men like François de Beaucourt (1724-87), in the work of the great French-Canadian ecclesiastical architects and decorators, the Levasseurs, the Baillargés and the Quévillons, one can see the legacy of a fine Renaissance-Classical style. This later developed, as the church of Ste Famille, Quebec, shows, into a native style merging Renaissance French with patterns inspired by the landscape along the St Lawrence: the steep-pitched roof, bell-cast eaves and slim spire. The French-Canadian church is as much a product of the Quebec hills as the grain elevator is of the Prairies.

The style passed on from father to son for many generations, aided by the wisdom of Mgr Laval, first Archbishop of Quebec, who established in 1672 an *École des Arts et des Métiers* to further the development of craftsmanship. Today the tradition, despite heavy inroads of commercialism and the machine-made product, still flourishes in the carvings and toys produced in the small villages along the Lower St Lawrence and the Gaspé.

Early in the 19th century a settled civilization in Quebec existed alongside a pioneer community in Ontario. In this period art in Upper Canada was kept alive by the formation of local societies ("My being treasurer, I had to pay £35 out of my own pocket" is a sad comment on the support they received) and by topographical artists. These men were mostly military attachés who, in the course of their duties, made many sketches of local landscapes. They were heavily in-

(Opposite) The first French settlers in Canada carried with them the artistic traditions of Renaissance France, as this 18th-century self-portrait by François de Beau-court shows. (Right) 'The Rideau Canal, Bytown' (now Ottawa) by W. H. Bartlett, an expatriated Englishman of the early 19th century, the most famous of a group who helped to keep interest in art alive in Upper Canada from the end of the 18th to the middle of the 19th century



Photographs by courtesy of the National Gallery of Canada except where otherwise stated

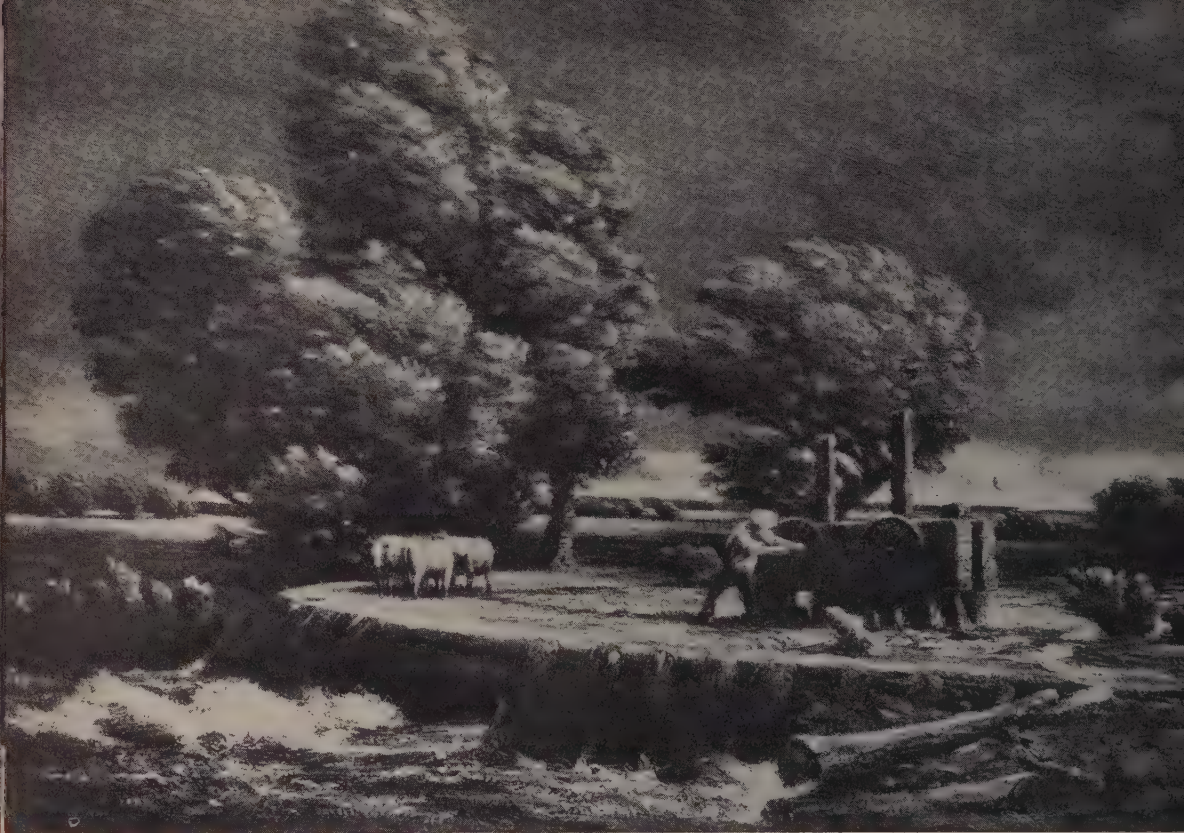
'The Cascade Mountains' by Captain Warre, perhaps the most talented member of the same group. He belonged to the 19th-century school of romantic landscape-painters, and did much of his work in the Pacific North-West



By courtesy of the Public Archives of Canada

'Indians playing at Alcolah', by Paul Kane, celebrated for his illustrations of Indian life. He made a 6000-mile trip on foot and by canoe to find his subjects, and though not a great artist was a clever and accurate recorder





(Above) 'The Flood Gate', by Homer Ransford Watson, R.C.A. (1855-1936), still shows strong European influence. But in his contemporary J. W. Morrice's 'The Ferry, Quebec' (opposite, top) appear the first signs of a Canadian artist seeing Canada with a character strictly its own and not European, although the interpretation owes something to French impressionism; 'Valley of the Devil River' (bottom) is by another contemporary, Maurice C. Cullen, famous for his snow paintings

fluenced by the followers of Claude, and the Canada they saw was necessarily limited to the vision of an expatriated Englishman. But they represent a continuous tradition from 1790 to 1850. Perhaps the most famous of them is W. H. Bartlett (1809-54), whose 'Canadian Scenery' is now a collector's piece; but probably the most talented was Captain Henry Warre (1810-70), whose journeyings in the Pacific North-West produced many cameos like 'The Cascade Mountains'.

Forerunners of a native school were Paul Kane (1810-71), who did his finest work among the west-coast Indians, making a remarkable two-year, 6000-mile trip on foot and by canoe to seek out his subjects; and Cornelius Krieghoff (1812-72), who during his fifteen-year residence in Quebec City proved an apt recorder of the local comedy of manners. Neither can be classed as a great

artist, but their importance lies in the vision which enabled them to undertake accurate and often amusing reportage of the local scene. Kane's horses posture after the manner of David, and Krieghoff's scenes of *habitant* revelry owe as much to some half-remembered central European Walpurgis Night as to Canada. But the drama of the surroundings still rings true.

With the coming of the security necessary to cultural pursuits, painters and art societies arose. In 1880 both the National Gallery of Canada and the Royal Canadian Academy were founded. It may appear strange that an academy should have been established before a native art had struck root; but it has to be remembered that the infant Dominion was prone to ape its elders in most things, and that its elders were in the throes of a mid-Victorian orgy of institutional bad taste. In





'Landscape' by Tom Thomson (1877-1917) who not only seized on the characteristics of his country but expressed himself in a distinctively Canadian manner and influenced later Canadian artists

Canada, the period from 1860 to 1890 is filled with a number of painters with high-sounding titles, most of whose work is now forgotten. Exceptions are the rugged landscapes of Homer Watson (1855-1936) and the Millet-esque farm scenes of Horatio Walker (1858-1938).

But an audience for the appreciation of art was in the making; and with the opening-up of the West came a fresh surge of national awareness. Among the younger artists Impressionism had its effect, and the results were spectacular in bringing to light as an asset what had hitherto been regarded as a liability: the snowscape. In the hands of men like Cullen, Morrice and Suzor-Coté, the varying

texture of the snow which shrouds the Canadian earth for five months of the year took on new life. Aurèle Suzor-Coté (1869-1937) caught the rich buttery texture of late spring, Maurice Cullen (1866-1934) the hard powdery sub-zero snows. James Wilson Morrice (1865-1924), who spent much of his life in Paris, was a greater artist than either. It is in mood and overtones, rather than design, that he excels. Such paintings as 'The Ferry, Quebec' still stand as classic expositions of the Canadian atmosphere.

But for Canadians that image of their own land which every man carries in his heart could be found neither in the impressionist ventures of local artists nor in the atmospheric

essays of sensitive expatriates. At some point a truly native art-form would arise, and that point occurred when the land was sufficiently subdued to be viewed with interest and pleasure by artists as well as by lumberjacks and *voyageurs*. Yet in the end, the inspiration for a fine school of landscape-art came, not from the tamed countryside but from the ageless land that lies along the northern fringe of settled Canada: the Laurentian Shield.

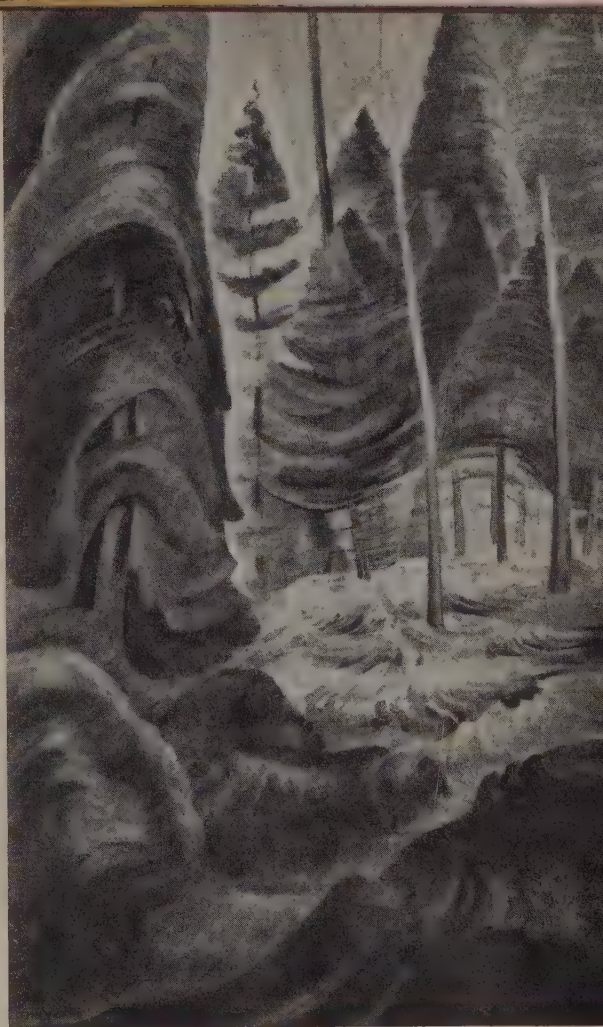
Many Canadians are apt to resent emphasis on the Shield, in the same way that they objected to Kipling's phrase, "Our Lady of the Snows". But the fact remains that both in their heart and their national economy this great mass of granite, covering one-third of the Dominion, has been dominant and formative.

In his poetry and his music, and above all in his art, the Canadian yields to the sombre fascination of the Shield, the back-drop of his national life. He finds in the hard lonely beauty of the great barrens spiritual excitement and spiritual peace.

Into the northern landscape, between the years 1910 and 1925, went a group of men whose painting is the most important single contribution to the Dominion's art, and whose influence still permeates much contemporary work.

The forerunner of the group was Tom Thomson (1877-1917). Though he worked in a commercial engraving house in Toronto, he was almost entirely self-taught. But he is in no sense a primitive. A greater painter might have made a more plastically satisfying record of the North Country; but no amount of artistic competence could outweigh the overwhelming conviction of Thomson's work. In his short career of less than five years as an artist (he was accidentally drowned when his canoe upset on the lake that was his home) he created images of the northern landscape in all its moods, which have now become part of the national heritage.

In 1919 Thomson's fellows formed the Group of Seven, and for fifteen years their work dominated the contemporary scene. The original members were A. Y. Jackson, Lawren Harris, J. E. H. MacDonald, Arthur Lismer, F. H. Varley, Franklin Carmichael and F. H. Johnston. The Group had many followers, not only in the world of art but in letters and public speaking, and during its life provided a mainspring for a resurgence of national culture. By the early 'thirties the school child had his collection of five-cent reproductions, and in most public and many private collections the works of the Group were hung.



By courtesy of the Art Gallery of Toronto

'Rushing Sea of Undergrowth' by Emily Carr, born in British Columbia in 1872, who specializes in portraying the rich purplish-green undertones of her native forests and the totem-poles of her Indian friends

In time the movement bred a strain of imitators. Painters went north because it was fashionable, rather than from any sense of urgency. While the movement had documented the Canadian landscape, it had neglected the inspiration to be drawn from the more settled parts of the Dominion, and from the varied peoples who make up the nation.

A number of older painters remained untouched by the Group's activities, and were each working out their own particular idiom. In Quebec, men like Clarence Gagnon (1880-1941) with his sensitively conceived illustra-

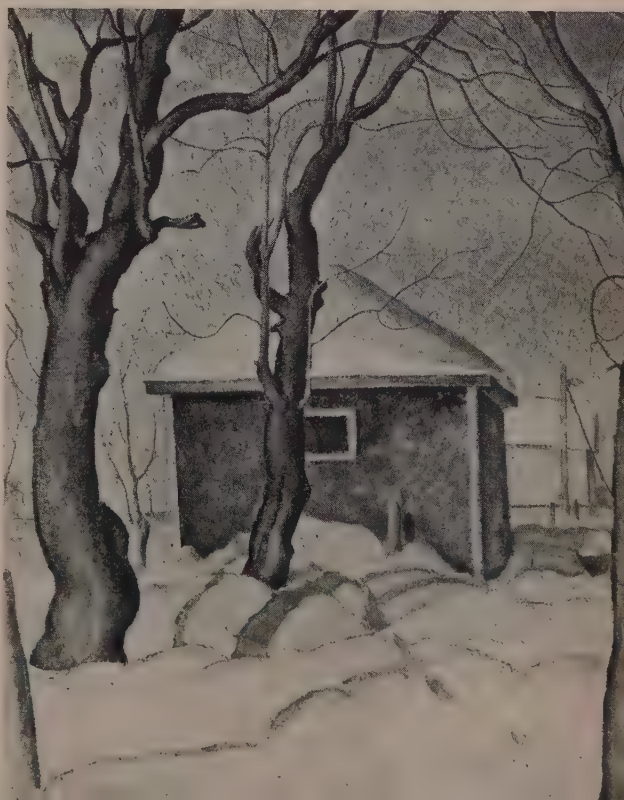


By courtesy of the H. S. Jackson Collection, Ottawa





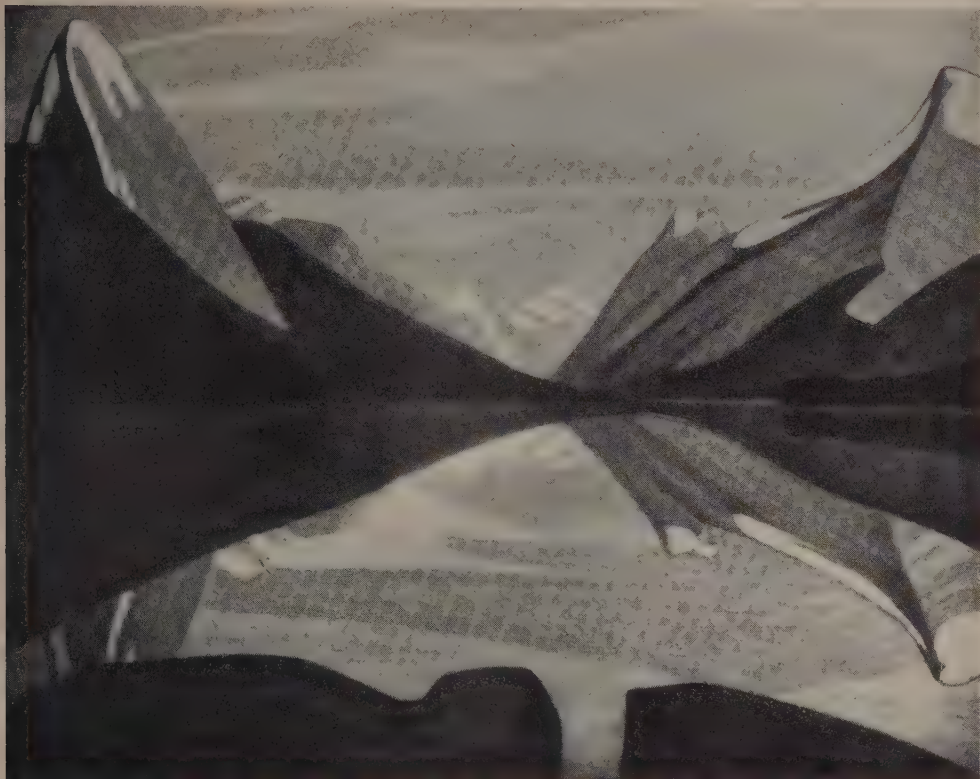
Work of 'The Group of Seven' which owed its first stimulus to Tom Thomson. A. Y. Jackson is regarded today as Canada's leading landscape painter. His 'Grey Day, Laurentians' (opposite, top) catches the spirit of Canadian farming and the struggle of Northland pioneering; 'October on the North Shore' by Arthur Lismer (bottom), and 'Georgian Bay' by F. H. Varley (above) show the powerful effect on the artists of massive landscapes and tempestuous weather. L. L. Fitzgerald's 'Williamson's Garage' (right) gives a more domesticated and tranquil glimpse of the Canadian scene





By courtesy of the Artist





'The Group of Seven' (continued): (Opposite, top) 'Grace Lake' by Franklin Carmichael shows the artist's highly developed sense of design, though his work is much less stylized than that of Lawren Harris whose 'Maligne Lake' is shown above; E. H. Holgate's 'Suzy' (bottom, left), one of the few portraits produced by the Group, exhibits a remarkable similarity, in composition and vision, to the rugged landscapes; J. E. H. MacDonald, the lyricist of the Group, with 'Gleams on the Hills' (middle) reveals the Northland as a rich and rather sombre tapestry. A. J. Casson in his decorative 'Church at Magnetawan' (right) drives home his conception by forceful contrasts. Throughout the Group the predominating influence of nature makes itself felt





By courtesy of the Graham McInnes Collection, Ottawa

Henri Masson, one of the younger artists of today who promise to do much for Canadian art, gives to his French-Canadian 'Gatineau Landscape' (left) a lightness and sparkle that are very French. (Below) 'Young Canadian' by a young mural artist, Charles Comfort, known for his work on the walls of the Toronto Stock Exchange and the Montreal National Railway Station, has caught the frustration that swept Canada in the 1930's. The water colour, 'Gardening Children' (opposite), by Pegi Nicol, expresses Canadian life from within



By courtesy of Hart House, University of Toronto

tions to *Maria Chapdelaine*, and Marc A. Fortin (1888-) with his urban realism, each sounded a different note. In Ontario David B. Milne (1884-) developed a spare, wry and very personal approach to the rolling landscape of the south. In British Columbia Emily Carr (1872-) created, almost in isolation, an impressive series of canvases of the coast landscape. From Indian totem-poles and the rich purple-green of the British Columbia forest Miss Carr worked out a deep and vivid poetry in paint.

But it is among a younger group of men, owing something to native realism and something to Post-Impressionism, that the strength of our painting lies today. They have seized the rhythms of the soil around them; they have peopled the Canadian scene. These younger men no longer rely on the magic of the Last Frontier; they look nearer at hand, and more shrewdly.

The outbreak of war found the artists of Canada well organized. The various regional and national societies at once offered their services to the Government. The Federation of Canadian Artists grew out of a conference of artists at Kingston, Ontario, in June 1941. Non-political and nation-wide in its membership, it has exerted a strong influence in crystallizing among artists opinion as to how they might best fit into the war effort. Through the special columns devoted to its interests in the monthly magazine, *Maritime Art*, the F.C.A. urges its members to action; and many have worked in war plants and on farms as artists. Meanwhile the National Gallery, under H. O. McCurry, has persuaded the Department of National Defence to establish the Canadian War Artists' Committee and today nearly a score of painters are serving overseas with the armed forces.

On the home front the initiative has also been seized by the War Information Board which, under John Grierson, is now planning poster work on a national scale. The Board encourages the formation of local art groups to combat national problems, to stimulate with painting and poster, community work on conservation, nutrition and industrial morale. As a new venture the National Gallery and the National Film

Board have collaborated in turning out colour films on the work of leading Canadian painters.

The art of Canada has yet to integrate itself with our total effort to the extent that has been done in Britain and Russia. But it is already active. Artists are excited at the possibilities opening up as the nation puts forth her utmost energies for war: the architectural flash of machines, the new air routes, the expansion of industry, the opening-up of the Arctic: these events are having their effect on the nation's art, and are also an invitation to experiment.

The art of post-war Canada will be at once richer in content, broader in approach, bolder and more sophisticated in technique. It will reflect and interpret the more complex and dynamic image of the active nation which is emerging from the war. The artists of Canada have seen the vision of a greater and better world. They will not easily let it go. Their task is to interpret it, and thereby make it easier of ultimate realization.



The Russian Convoy Route

by G. L. HOGBEN

IN the middle of the 16th century the riches of the East lured English adventurers to seek an eastward passage in whatever direction they might go without encountering the armed might of Spain or Portugal. Exploration of the North-West Passage, north of Canada, led them only to the rocky, snow-covered coasts of Labrador. Sebastian Cabot suggested another possible route, and Sir Hugh Willoughby and Richard Chancellor sailed north-east. Willoughby died, but Chancellor reached Archangel. He was the pioneer of a route which, in this war, has been one of the lifelines of Europe.

The merchant seaman setting out for Russia today is scarcely less heroic than those early explorers. Chancellor triumphed over fear of the unknown terrors of nature; the man who sails in a Russian convoy faces not only these, but man-made perils which he knows only too well. Passing over the much-advertised dangers due to the war, I will write here only of the natural features of the Arctic convoy route which have not been sufficiently described.

Two hundred miles to the north-west of the Orkneys lie the Faeroe Islands, at a first glimpse black shapes almost hidden in wraiths of mist and low cloud. It is difficult to believe that anyone could live in what appears to be the very source of mist and fog.

But the Faeroese are a fine-looking people—sturdily built fishermen, remarkably hospitable towards temporary, friendly, invaders: there are many stories of their kindness in sharing meagre resources with our forces there. Life in the Faeroes is neither easy nor comfortable by our standards. The weather is capricious and uncertain. Even on days when the surrounding ocean is calm, and the sky blue, the Islands are shrouded in mist and beset by squally breezes. The fickle weather of the Faeroe Islands is, however, only the forerunner of conditions on the convoy route.

Further to the north-west lies the more substantial Iceland, where life appears to the visitor to be pretty grim, as if the inhabitants were living under a constant strain. There is a marked difference of temperament between the Icelanders and the Faeroese.

The coastline of Iceland is indented with

fjords, first-class anchorages for ships. They are not, as a rule, as long and tortuous as the Norwegian fjords, and as a result the fjord winds are much more severe in Iceland than in Norway. Apart from these local winds, however, the winds in Icelandic waters tend to be more severe than elsewhere because the "depression over Iceland" is more than a B.B.C. joke—it is statistically true to say that Iceland is more often within 150 miles of the centre of a depression than is any other comparable mass of land, which means that strong winds are comparatively frequent.

These strong winds make life much more difficult to bear than would cold alone; the combination of a low temperature and a wet atmosphere, owing to the juxtaposition of warm wet ocean air and cold polar air, added to the strong winds has a noticeable effect on the British who live in Iceland. At first a British visitor is struck by the fact that the Icelanders (or the Faeroese) seems to tire easily; but after a stay of some months, he himself has an overwhelming desire to go to bed early and a disinclination for exercise of a sort that he would have welcomed in Great Britain. Even a walk on a fine clear spring evening was often more than our British garrison in Iceland would attempt.

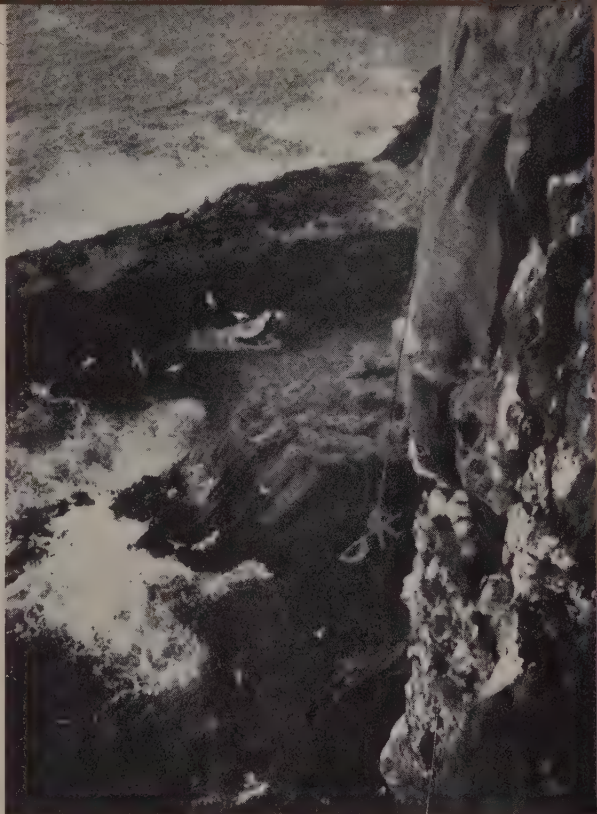
Iceland, with its deep fjords, its squally wetness, its reserved and ancient people, is the last link with the world of cinemas and dance-halls before the dangerous voyage to Russia begins.

In the years before the war, ice patrols would warn the seaman if ice threatened his route. International meteorological services would warn him of approaching storms, even before his barograph took its downward curve. Ships passed in the night with lights gleaming, navigational dangers were reported by the first ship which met them, and broadcast to the great international of the sea. If an emergency did arise, then any ship had more than its quota of experienced officers well able to deal with the situation. But those dangers, so despised in the past, have assumed a new significance for the Arctic convoy man. He doesn't know for certain where the ice is. He knows that he may be followed by storm after storm—but that his

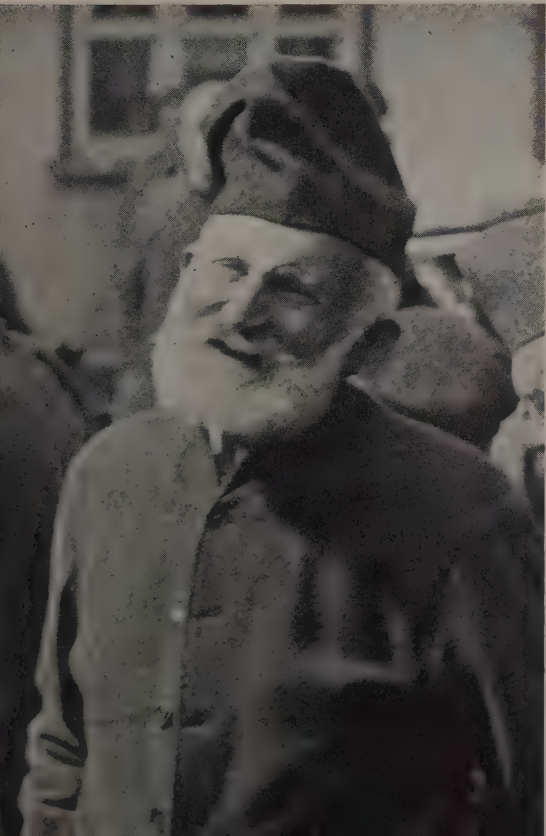


Stanford, London

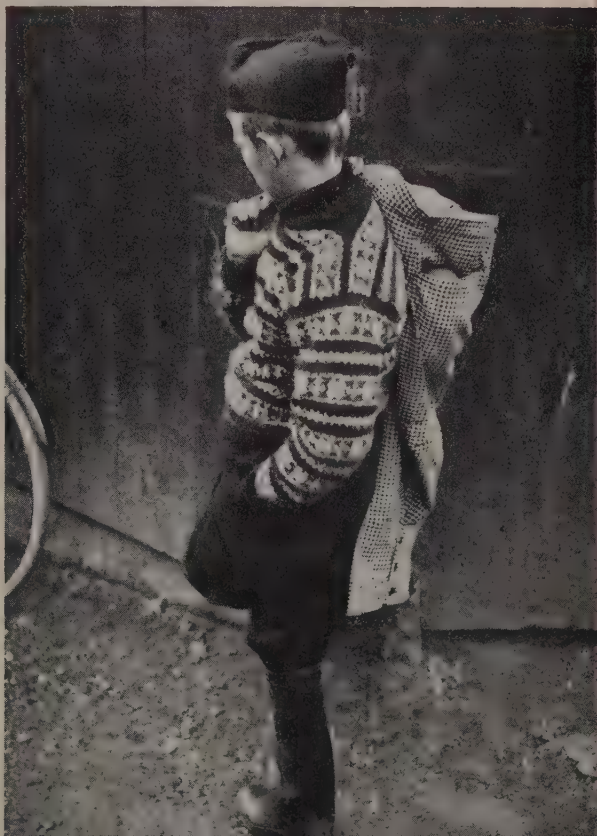
(Top) Cliffs of the Faeroe Islands which are often shrouded in mist and beset by squally breezes. The inhabitants are a fine-looking people—as the photograph of this old fisherman (below) shows. (Right) Faeroese boy in a brightly coloured home-knitted sweater



Black Star



Black Star



Black Star

convoy must go through. He will have to keep his station in the convoy—a more difficult task than merely keeping his own ship hove-to in heavy winds and seas. He must meet the storm dangers in a seamanlike way, and his deep-laden ship must nevertheless continue to make a steady passage northwards, with fewer experienced hands than in pre-war days.

One of the favourite storm-tracks lies along the Denmark Strait. This passage between Iceland and Greenland has more than once been of use to the German commerce raider, but the Germans, who are not outstandingly good seamen, do not find the passage easy. It looks comfortably broad on a chart, but in practice its breadth is reduced by the ice from which the coast of Greenland is never free. When the ice has receded, in mid or late summer, the passage is a comfortable 150 or so miles wide, but in winter it may vary between as little as 30 and 70 miles. If there is a prolonged north-westerly storm the ice is blown perilously close to the coast, and may well wreck the good ship essaying the strait.

By Denmark Strait, then, or perhaps by the calmer eastern passage, the convoy passes beyond the Arctic Circle, and the north of Iceland.

Two hundred miles north of the Arctic Circle lies the little island of Jan Mayen. I remember well the first time I saw it. The day was cloudy, but visibility was good at sea level, 15 to 20 miles. We were not certain exactly where we were, but hoped to see Jan Mayen's 8000-foot peak and thus fix the ship's position. We were disappointed, however; Jan Mayen had been left far astern, unseen. But suddenly, a casual visitor to the bridge said: "I see Jan Mayen's over there"; and there it was. Perched in a break in the clouds, above a fat cumulus, the island's peak lay behind us at a distance of 70 miles. It stayed in sight—a clear reminder that the best look-outs are not infallible.

Jan Mayen often lies in an Arctic air-stream, and the visibility is very good if the air has come directly off the ice. If, however, the air-stream has had even a comparatively short sea passage, the sky will be covered by low rolling clouds. There will be

After the Faeroes the Convoy passes to the fjord-indented coast of Iceland (below and opposite), where local winds tend to be even more severe and floating icebergs show the effects of polar, and warm wet ocean air





Alexander King

(Above) Beerenberg, the 8000-foot peak which is the dominating feature of lonely little Jan Mayen Island, is sometimes visible from a distance of more than a hundred miles





Percy G. Luck

North of Jan Mayen is Spitzbergen, a group of islands only 600 miles from the North Pole and consequently icebound for a large part of the year. It is hard to think of a less friendly coast: in many places, as at Smeerenberg Bay—shown here in the light of the midnight sun—it consists of a wall of solid ice, rising to a height of over 200 feet

snow flurries, which can be seen approaching like an obscuring veil blown across the otherwise perfect visibility—a few starlike crystals on your sleeve, and the flurries are gone, leaving the air as clear as it was before.

But this Arctic clearness, which persists in the north, is hidden in the twilight of the Arctic winter. Once past Jan Mayen other ships in a winter convoy become mere forms in the gloom. At first, when the Arctic circle is crossed, the dark is not apparent. It is merely light without sun. Soon, however, there is nothing but twilight, and later even this twilight fades away, leaving a chilly darkness, relieved by the twinkle of stars through breaks in the perpetual low rolling cloud of the Arctic Sea.

North, past Jan Mayen, is Spitzbergen, a group of quite large islands only 600 miles from the Pole, and consequently icebound for

a large part of the year. It is hard to conceive of a less friendly coast than the west coast of Spitzbergen. Low heavy cloud and black rocky cliff combine to make one expect a race of savage and inhospitable natives waiting to pillage wrecks. But there are no natives. An Arctic silence—that specially frightening kind of quiet—grips the land.

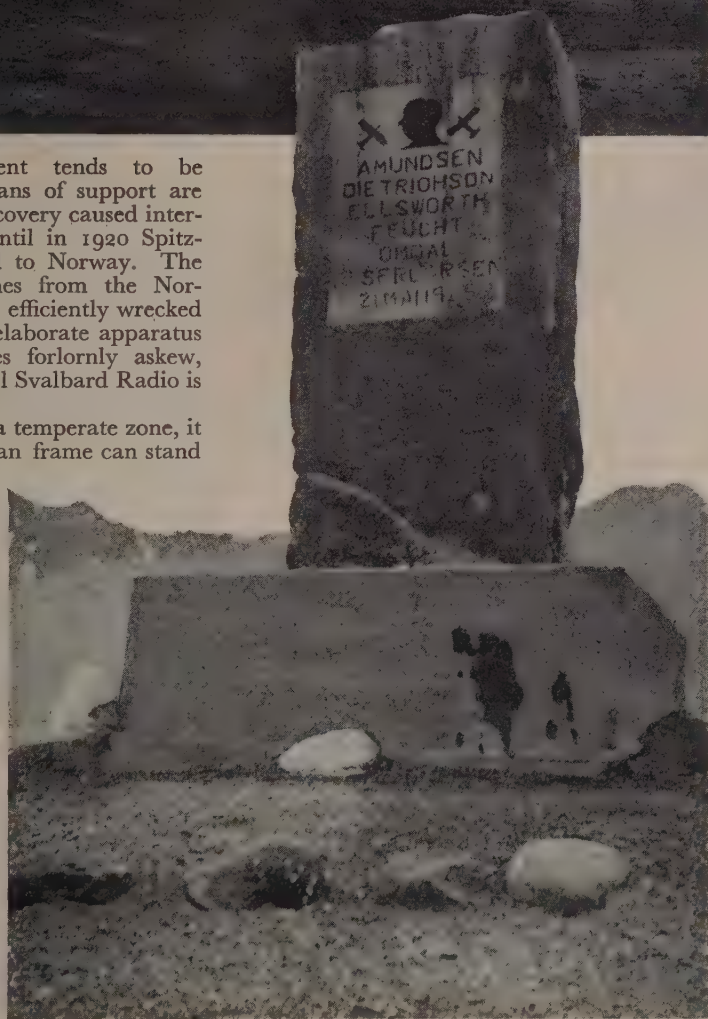
Although there are no natives, there were before the war some immigrant settlements. The main Norwegian settlement was at Longyear, on Advent Bay, and there was a large Russian one at Greenfjord, both of which lead into Icefjord, a broad, long, west coast fjord with several minor fjords leading into it. Although the distance between these two settlements is only 30 or 40 miles, for ease of intercommunication they might be London and Glasgow. The country between is difficult, generally snow-covered, and as a con-



sequence each settlement tends to be self-sufficient. Their means of support are the coal mines, whose discovery caused international complications until in 1920 Spitzbergen was finally ceded to Norway. The Russians lease their mines from the Norwegians. Today, all too efficiently wrecked by our commandos, the elaborate apparatus for loading the coal lies forlornly askew, deserted, and the powerful Svalbard Radio is silent.

To the Briton, bred in a temperate zone, it is amazing that the human frame can stand

(Above) Remains of the hangar at Ny-Aalesund, Spitzbergen, from which the airship Italia, under the command of Nobile, set out in 1928 for its ill-fated journey to the North Pole. Amundsen, who with Nobile had previously crossed the North Pole in the Italia (then called the Norge), flew in an aeroplane to find his old colleague, but was killed in a crash. Nobile was ultimately rescued. This monument (right) was put up at King's Bay, Spitzbergen, to commemorate Amundsen and other Arctic explorers



Percy G. Luck



As the Convoy nears the Russian coast, 52 degrees of frost are registered and the metal on the upper deck and guns of the escorting cruiser 'burrs' to the touch. The crew have to wear arctic clothing. In this photograph (left) the torpedo men are preparing a paravane. (Below) The coast of Bear Island which, like Jan Mayen, marks the seaward edge of the winter ice-pack. It is the last landmark before the home stretch to Russia is entered

Fox Photos



a climate where the temperature on a hot summer's day may be 22° F. In fact, parts of Northern Norway are colder than Spitzbergen, but owing to the strength of the winds which whistle up and down the Spitzbergen fjords, Norwegians find the Svalbard climate more difficult to live in. From May 1937 to February 1938 Ivan Papanin and three other Russian scientists lived on an ice-floe that started its southward drift from the Pole itself, and finally landed off the coast of Greenland, not far from the convoy route. Which proves that man can live in almost any rigour of climate if he is sufficiently well prepared, physically and psychologically. A German torpedo would not, however, constitute sufficient preparation to resign our convoy-men to life on an icefloe, and shipwreck on Spitzbergen is almost as unattractive a prospect.

Half-way between Greenfjord and Norway lies Bear Island. Like Jan Mayen it marks the seaward edge of the winter ice-pack, and convoys can pass north of it only in the summer months. It is the last landmark before the home-straight is entered, and the navigator's last chance for a land-fix before the hazardous run to harbour.

In Arctic seas navigational hazards are great. The usual method of finding the ship's position by means of a forenoon sun sight and a second sight taken at noon ceases to be useful in an area where there is no sun. In many cases pre-war navigational tables did not cover these latitudes, but as a result of the extension of our field of sea endeavour, first to Iceland, and later to Russia, new, more universal, tables are now published. The navigator now knows that, provided he can make the horizon and an elusive star meet in his sextant's eye, he will be able to find his position all right. This is not so easy as it sounds. Owing to the particular roughness of the northern seas, and the cold humidity of the atmosphere which causes a quick mist over the sextant mirror, added to the prevalence of low rolling cloud cover in arctic air masses, the navigator has an unenviable task. Anyone who has seen the variety of results obtained when the ships of a convoy compare their noon positions realizes how far separated the results of the experts in different ships may be. A ten-mile circle will sometimes cover this group of positions if the weather has been moderately fine. But in Arctic weather a thirty-mile circle on the chart may fail to enclose all the estimated positions.

These difficulties in taking regular sights,

added to the problems of reckoning what the currents have been, and how far the wind and sea have set the ship, are bad enough. But there is one worse problem—the ship's compass. In northern latitudes both types of compass, the gyro and the magnetic, are liable to unusually large errors, although for different reasons.

The gyro-compass is a complex instrument with devices for counteracting nearly all the errors which the movement of the ship, rough seas and the spin of the earth may induce. But in northern latitudes the spin of the earth has a greater effect than in lower latitudes, and, more particularly in rough weather, the gyro-compass may have several degrees of error in consequence. Now a three-degree error in course for a 200-mile trip would result in a ten-mile error in position, unless the navigator knew his compass error. But it is difficult to assess these errors without seeing either stars or the sun often.

The errors of the magnetic compass are similarly difficult to check in starless or sunless weather. They are hard to estimate if the seas are not well charted, and if the magnetic variation (due to the earth's magnetism) is changing rapidly along the ship's line of advance. In the northern seas there is not the wealth of magnetic observations which make magnetic compass navigation a delight on more beaten tracks. Moreover, the variation changes rapidly in an east-and-west direction, and the estimated positions suffer in consequence.

One other less well-known inconvenience of the northern route is the difficulty of communications between ship and shore. As a result of the naturally great atmospheric difficulties, and perhaps partly owing to our lack of knowledge of the upper atmosphere, wireless communication is more difficult there than elsewhere. Changes in conditions of reception occur rapidly and unexpectedly, and wireless operators, numbed by cold and bewildered by atmospherics, must find little to encourage them.

But, taken in sum, the formidable collection of difficulties that beset the sailor who goes to Russia reinforce the view that the development of the almost forgotten Northern Convoy Route is one of the biggest achievements of this war, and may finally be a major factor in the Allied victory. It shows, too, that the Elizabethan unwillingness to admit defeat by man or nature has been passed on in full measure to Chancellor's 20th-century counterparts.

In our November number, on page 348, it will have been obvious to our readers that the reference to Margaret of Australia was a misprint for Margaret of Austria. This lamentable error was due to circumstances beyond editorial control, arising from a last-minute breakdown on the machines when the number was printing.

We associate ourselves with the Printers in expressing our regret.



People of the Pripet Marshes

by A. T. LUTOSLAWSKI

The river Pripet is a tributary of the Dnieper and once again the famous Pripet Marshes, in which during the last war thousands of Russian and German troops were drowned, have been a battlefield. Much of the large area they cover, lying in the Polish Province of Polesie (meaning woodland),

is inhabited only by waterfowl and a few animals such as beaver, wild boar and elk; but the greater part is forest and cultivated land, with a small peasant population. The people of the marshes tend to be contemplative and passive in character and outlook, and seldom communicate with the outer world. Their villages are built of wood: this wooden belfry shows the architecture common to the region. The picking and drying of mushrooms has always been a favourite occupation of the peasants, who generally manage to be self-supporting and buy few manufactured goods from the merchants in the little towns that stand on the solid areas among the marshes. In the late 1930's, when an aerial survey of the region was made by the Government, one village was discovered, in the wildest parts, where news of the last war had never penetrated





There is a great restfulness and a sense of isolation in the wide landscapes of Polesie. No wild-fowler with his gun and his dog ever tired of exploring the rivers and backwaters of the marshes, so quiet and teeming with wild life. The peasants who farm the land were, in the old days, great poachers. They know the life of the marshes intimately and are familiar with every reed-grown backwater and the thousands of small bushy inlets





Stanford, London

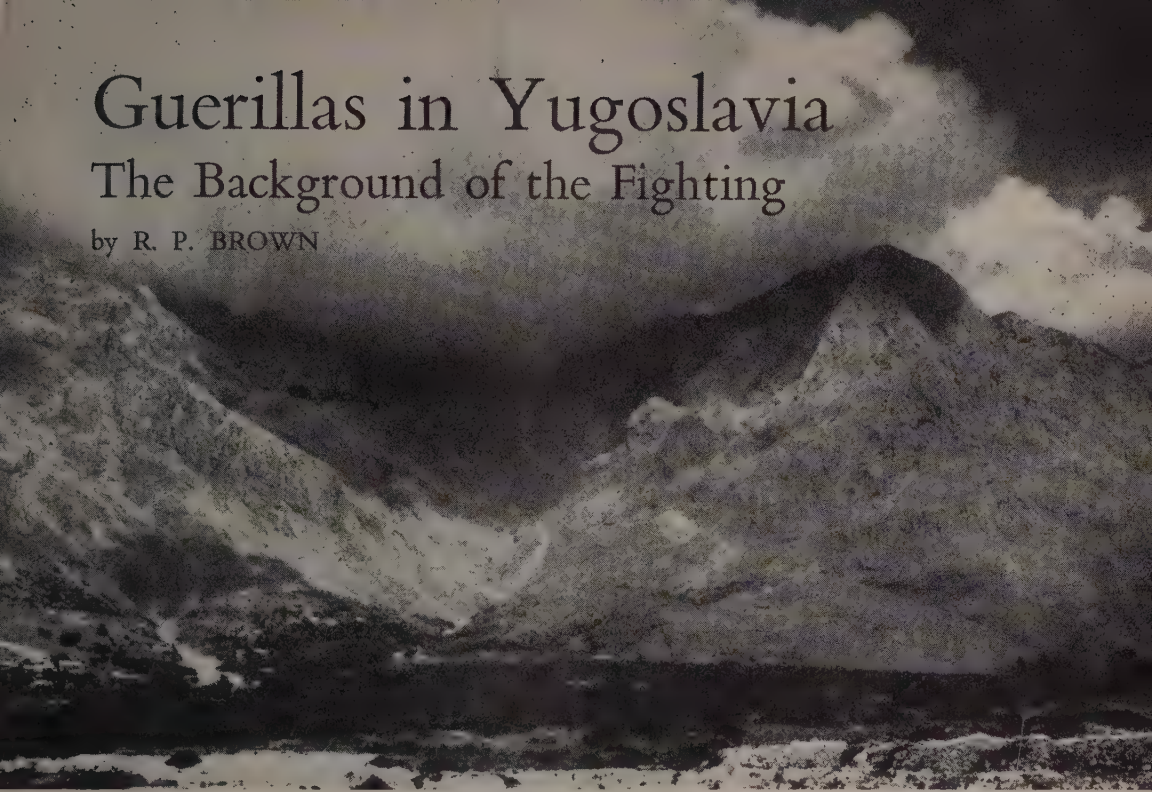
Their piety is reflected in the wayside crosses, hung with pieces of cloth and offerings, probably a remnant of an old heathen tradition. In the past twenty years a great part of the marshes has been reclaimed by the Polish Government and cultivated. The work of reclamation included the building of great wooden causeways. One is shown here, in an early stage before it was completed, with the vast plain stretching away behind





Communication in Polesie was for generations by means of small boats and simple farm carts. The cart and the horse were carried on the boat; when a stretch of firm land was reached the boat was loaded onto the cart. Such journeys could not be very fast, nor could they be carried out in winter when snow and ice forbade all journeying.





Guerillas in Yugoslavia

The Background of the Fighting

by R. P. BROWN

In this article the author does not attempt to cover the whole area in which large and small groups of Yugoslav guerillas have been fighting the Axis forces, or to specify the military achievements of these groups. His object is, by taking a representative section of the country in which the guerilla forces have been operating, to explain the nature of the geographical background and some of the main targets it includes

(Pronounce č like tch; j like y; š like sh; and ž like s in 'measure')

WHAT is the nature of guerilla warfare? We may quote from *The Seven Pillars of Wisdom*, the work of a man who had successfully practised guerilla warfare in a scientific manner. T. E. Lawrence wrote: "Suppose we were an influence, an idea, a thing invulnerable, intangible, without front or back, drifting about like gas? Armies were like plants, nourished through long stems to the head. We might be a vapour blowing where we listed. Our kingdoms lay in each man's mind . . . to make war on a rebellion is messy and slow, like eating soup with a knife." This is the essence of the struggle in Yugoslavia and all other 'resistance' countries. The enemy's supplies and communications are the first target, and the occupation or loss of territory is of small importance, whatever the suffering involved.

Knowledge of this purpose will enable

readers to understand why I have filled this article with the names of railway stations and keypoints rather than used the space for broader and more inviting descriptions. But the illustrations, I hope, will give some idea of the terrain in which the main operations mentioned in the news are taking place.

Anyone interested in guerilla warfare should read Yank Levy's book *Guerilla Warfare* (Penguin 'Special'). Levy was trained in Spain, as was Tito the Commander-in-Chief of that section of the Yugoslav partisans known as the 'People's Army of Liberation' and many of his subordinate commanders, and the tactics described in Levy's book are now undoubtedly being employed against the Nazi enemy in parts of Yugoslavia.

* * *

The Slovenian operational area is alpine, in the extreme north-west, comprising Venezia

Giulia as far as and even beyond Gorizia. In the south, it enters the Karst country adjoining Trieste.

Other Slovenian fronts include the country north of Ljubljana, round Kamnik, and

south-east of Ljubljana, centring on Zuzemberk, Novo Mesto and Kočevje. North of Kamnik, the country is alpine, just as in Venezia Giulia.

The main railway lines in the extreme

The Triglav massif, on the Yugoslav-Italian frontier. This picture typifies the alpine area at a height of 4-5000 feet, the peak is about 9000. The style of living and habits of the population differ hardly, if at all, from those prevailing in adjoining alpine Italy and Austria. Nevertheless there is strong national feeling and pride in the oldest spoken Slavonic language, Slovenian



north-west are the Tarvisio - Jesenice - Ljubljana line, covering transport from Germany to Italy; the Trieste-Rakek-Ljubljana line, covering transport from Belgrade, Hungary and Vienna to Italy; and the Ljubljana-Karlovac line, which, again, leads to a second line running to the Adriatic at Sušak-Fiume. All these lines have continually been the targets of the guerillas. Other important places are Grošuplje and Vrhnika.

The next main resistance area south of Slovenia is in the Lika, based on the Velika and Mala Kapela ranges. The main towns, from north to south, are on the railways: Ogulin-Šibenik, Vrhovina, Gospić. West of the line there is Otočac, and east of it Bihać. The northerly fringe of this area is crossed by the Fiume-Ogulin railway; both these lines have constantly been attacked. The Lika

country averages a height of round about 3000 feet, and is one of the most poverty-stricken districts in Yugoslavia.

West of the Lika is the Croatian littoral, with its islands Krk, Cherso, Lussino, Rab, Pag. Apart from these islands, names frequently in the news have been Crikvenica, Kraljevica, Karlobag and Zadar (Zara). These are on the mainland, backed by the Velebit range, which rises from the sea-shore almost vertically to a height of nearly 5000 feet of wild stone. The Velebit, with the two Kapelas, was a very early centre of resistance. It is important to bear in mind the contrast between the luxuriant coastal strips and the high desolate plateaux behind them. Only in the former, and not in many places there, could enemy forces establish themselves strongly. The islands—at the time of writing—are mainly controlled by the guerillas.



Stanford, London



(Top) Two of the Plitvica lakes in the Lika. Before the war, they were becoming a popular tourist centre in spite of the difficulty of transport. (Middle) Sušak, connected by a narrow bridge with Italian Fiume, is more commercial than would appear from this photograph, which reveals an excellent example of a Croatian littoral resort. (Bottom) This is how Croatian peasants have lived for hundreds of years, except that once their farms were not their own. The crucifix is an essential part of the picture, for the Croats are pre-eminently Roman Catholic. (Opposite, top) Makarska, one of the most beautiful places in Dalmatia, produces wine and is a strong centre of resistance; (bottom) Wheat harvesting. The main wheat-growing centres are north and south of the river Sava in Slavonia, the Voivodina and Mačva. Some of the finest wheat in the world is grown in the Voivodina



Percy G. Luck



South again of the Croatian littoral is Dalmatia proper. Places often attacked by the guerillas are Zadar (Zara), Šibenik, Trogir, Split, Omis, Makarska, Metković, Dubrovnik and Kotor, all on the coast; the islands Brač, Hvar, Korcula, Mljet, and the peninsula of Pelješac; and in the Dalmatian hinterland, the railway Ogulin-Šibenik-Split—especially the station Knin.

I have mentioned, in Slovenia and the Lika, the lines Ljubljana-Karlovac and Fiume-Karlovac. At Karlovac a very important task is the destruction of railway communications. Through Karlovac run the only lines connecting the Orient Express route with the central Adriatic at Šibenik and Split. One of these runs to Zagreb, and the other to Sisak a little further down the line. Heavy fighting has frequently occurred in this country, which unlike that previously mentioned, offers few natural obstacles. Important places strategically are Jastrebarsko, near the first, and Vrgin Most, Glina on the second set of lines.

North of the river Sava, and of the Orient Express line which follows it running south-west, are the Croatian uplands and Slavonia. This is a hilly but not mountainous country, between six hundred and a couple of thousand feet high. Chief resistance-centres from west to east are: the Moslovačka uplands between Bjelovar and Novska on the Orient Express line, Bilo uplands on the Hungarian frontier and the Papuka uplands, on the north-east between the Hungarian frontier (near Virovitica) on the Orient line. Before the 1914 war, this area was largely made up of great feudal estates. Communications in this district run

Dorien Leigh



From the author





Dorien Leigh

Much-photographed Dubrovnik (above) taken from a less common angle. In the extreme distance can be seen Croatia. These two fairly represent one of Dalmatia's chief industries, tourist traffic. This old Venetian walled city, and later independent republic, is normally responsible for a considerable part of Dalmatia's invisible exports. [Opposite] Venetian fortress at Trogir. Against the romantic background a girl is spreading out the petals of a kind of chrysanthemum from which pyrethrum is obtained. Dalmatia is a large exporter of this insecticide



mainly towards Hungary and have continuously been endangered by resistance forces.

* * *

In estimating the value of the activities of the resistance forces in Croatia and Slovenia, it is essential to emphasize their position astride the Zagreb-Belgrade railway, a position which has been fully exploited. At Brod and Vinkovci, south of the Danube, activities have been based on Fruška Gora, only fifty miles from Belgrade. The line from Germany, Northern Italy and Hungary to

Belgrade, and thence to the whole of south-eastern Europe, can be said to have been potentially covered by these Guerrillas.

From this Eastern digression, we must return to the areas where heavy fighting is constantly recurring, in Bosnia and Hercegovina.

Starting from Bihać, the focal point of the Guerilla forces in the Lika, we enter West Bosnia by way of the Grmeč Mountains which reach a height of more than 3000 feet, forming an admirable base from which to operate

From the author



Percy G. Luck



against the railway Sunja-Prijedor-Split. On this line are names often referred to. I will mention only Kostajnica, Bosanski Novi, Sanski Most and Drvar. Immediately to the north-east of Prijedor are the Kozara Mountains, covering the river Sava and its essential network of communications; further still to the north- and south-east of the same town is the Cemernica range leading down to Travnik in Central Bosnia. A little below Travnik, at Lašva, the Prijedor line links up with the main line running from the trans-

verse Orient Express line at Brod, and running thence via Sarajevo and Mostar to Dubrovnik and the Gulf of Kotor (Cattaro). Very important places in the northern part of the line were Derventa, Doboj, a junction for Tuzla in the east; and below, Žepče, Vranduk and Zenica, the iron centre.

In Central Bosnia there is a transverse line of rail communications running from the Orient-Split line to Sarajevo by way of Jajce, Travnik and Lašva. This line has been the scene of very bitter fighting. In general, this

Percy G. Luck

(Opposite; top)
Split, the largest commercial and second largest naval port in Yugoslavia, ships, wine, olives, bauxite, cement, all of which are important Dalmatian products, besides handling trade with the interior of the country. Split also does a considerable tourist traffic. It is a town with a very ancient history, and contains the ruins of Diocletian's palace, which is now studded with shops and wine-houses. Below is Korčula, the very lovely island which grows some of the best wine in Dalmatia. (Right) Klis, a fortress built by the Turks in 1521 to control Split a few miles away. Klis was captured in 1647 by the Venetian general Leonardo Foscolo





(Left, top) Cetinje, one of the few flat places in Montenegro. This plateau is 3000 feet high and only a few miles inland from the Riviera climate of Kotor. The picture of Kotor (opposite) is taken from the serpentine road leading to Cetinje. (Left, bottom) Mostar: a Dinaric youth sitting beside the old Turkish bridge which gives the town its name. (Below) Christian women in the market in Trebinje, in Hercegovina

Percy G. Luck



Donen Litch



Percy

Bosnian area is mountainous, heavily wooded, with deep-cut valleys, a magnificent country for guerilla warfare which has been magnificently exploited. The population of Bosnia is, from a religious point of view, extremely mixed, including those who belong to the Roman Catholic, Orthodox and Moslem faiths. Despite all efforts of the enemy and his allies to exploit present religious differences, and past political difficulties, the mass of the population, with the fewest exceptions, has fought together for freedom.

South-west of Bosnia and west of Split is the classical Yugoslav land of Hercegovina, where the purest language is spoken by the purest-bred specimens of the Dinaric people, a language and a people which is claimed by Serbians and Croatians alike. Hercegovina is in general mountainous, rocky and desolate, with little timber. The chief town, Mostar, lies on the only, and vital, railway running from Sarajevo to Dubrovnik and the Gulf of Cattaro. It was round Konjic on this line north of Mostar, and on a front extending eastwards through Glavatičevo to Kalinovik, that some of the most serious fighting in Yugoslavia took place, when the Germans and their allies launched their biggest offensive. Other important places on this line are Jablanica and Metković at the mouth of the river Neretva. West of the line, on the border of Dalmatia, is Imotski, near the Biokovo Mountains, which have often served as a base

for reorganization. East of the railway are Nevesinje and Gačko. Right in the south behind Dubrovnik are Bileće and Trebinje.

* * *

Among other areas I have not described are Montenegro and the Sandžak. The second, in its western half, differs little from the territory upon which it borders—the corner of Bosnia and Hercegovina. The chief town, Plevlje, is on the Četina, one of four rivers running north-east through deep gorges which cut up the two territories. The other three are the most westerly; the Piva from the Montenegrin town of Šavnik; separated from it by the 7500-foot Durmitor is the Tara, whose source is far back in Montenegro. Last and furthest east is the Lim, which waters many places whose names have recurred in the news, Višegrad, Rudo, Priboj, Prijepolje, Bijelopolje and Berane. In the absence of railways, the valleys of these rivers form the fundamental routes for operations in the Sandžak and North Montenegro. They all flow into the Drina in Bosnia, the strategic key to the region.

* * *

It should be clearly understood that the scope of this article is purposely limited, since my object is, by taking a section of the country in which resistance forces are most active, to give a representative view of their geographical background without reference to political factors or groups.



From the author

The Structure of the Past

IV. The Rise and Decline of Crete and Mycenae (I)

by STANLEY CASSON

For several thousand years all evidence of the ancient civilization of Crete and Mycenae was utterly lost to sight, and it was only in the last fifty years that a series of excavations as exciting as the discovery of a new continent have revealed that a real historical culture lay behind the poems of Homer and the legends of Classical Greece. Colonel Casson, in this fourth article of our series, sums up and interprets what the modern archaeologist's spade has unearthed of this rich, peace-loving and highly artistic civilization

AMONG the varied civilizations of the past which have achieved something more than a mere raising of human existence above the level of simple well-being is that which flourished in Crete during the period 2000-1400 B.C. Cretan civilization—often called 'Minoan'—at this time rose, flourished bravely and then, owing mainly to faults inherent in itself, was overwhelmed by another, akin to it but less remarkable. This successor-civilization is usually known as the 'Mycenaean'. Both were blooms that flourished in an Age of Bronze, before iron was known as anything other than an odd and rare metal that had strange properties and talismanic values, but no utility. The successor-civilization had a short, eventful life of barely 250 years and then it, too, was submerged, ruined and overcome.

These Minoan and Mycenaean phases of Bronze Age culture in the Aegean Sea almost vanished from human memory, so complete and so final was their downfall. Mycenaean life was remembered by the ancient classical Greeks only as the background of the Homeric poems and, as a background, it was generally believed to have had little relation to reality. Few Greeks of the age of Pericles and later guessed that Homer was describing, in the main, real people, real events, against the background of a real world that had vanished barely 600 years before. Even as late as the middle of the 19th century few people really thought that the Homeric poems represented the life of a Bronze Age world of 1400-1150 B.C. and it is solely due to research in the last two generations that some credence has been given to the truth which Homer represents, at least in his background.

Far more complete was the disappearance into oblivion of the Cretan Minoan world.

Classical Greeks knew nothing of it at all. Stray memories of Theseus and the Minotaur and of strange happenings in the Labyrinth of Cnossos remained, but they remained as fairy stories. Crete and its 'hundred cities' were a myth to Greek, Roman, Medieval and Renaissance scholars and to all subsequent students until as late as 1895, when evidence began to accumulate which culminated in revealing one of the most intriguing and lovely cultures of history, fully equipped with art, literacy (and perhaps literature), an ambitious architecture, political institutions of an advanced type and everything that can make human life full and sophisticated.

I cannot hope to describe here these two phases of Aegean civilization in the fulness they deserve. But I will attempt to tell enough about them to indicate how they arose and why they finally collapsed.

The most important aspect of both is, perhaps, the fact that each in its own way contributed profoundly to the creation of that third Aegean culture which we call that of Ancient Greece, the three together laying the basis of the very civilization we enjoy (or used to enjoy) in Western Europe. Without Greece there could have been no Roman Empire and without the Roman Empire no Renaissance, and so none of the basis of political organization, law and justice, ethics and freedom, art and science. Without Greece we might well be living in a dark and Teutonic age from which we could only hope to emerge somewhere about A.D. 2500 after a long period of trial and error. Even so, what we should then have achieved might well be only a phantom of the Western civilization that we know, which owes its origin to Greece and Rome.



Stanford, London

It may be remarkable that the Ancient Greeks were unaware of the two phases of civilized life that had preceded them. But the Greeks were never good antiquaries, and preferred to look ahead rather than back. This was but one of the many signs of their virile advance, their swift creative genius, their impatient eagerness to improve. Countries that live upon past glory usually let it suffocate them. Egypt, after her first 3000 years of life, ceased to look forward, and so presents to the world the most complete picture of a static civilization there has ever been. Spain, in more recent times, has lived too long on memories, and there are other lands which, by dwelling overlong on their ancient glories, have forgotten to build for a more modern fame.

* * *

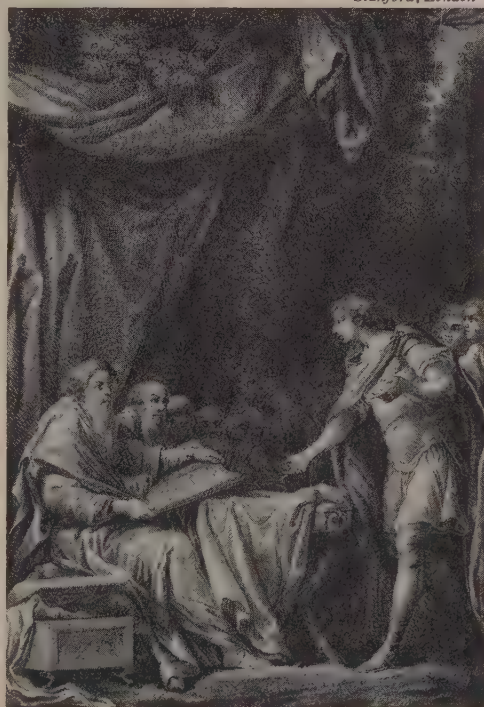
Crete is a lonely island. Its turbulent seas make approach difficult at any time of year, at least along its north coast. And on the south, where the ocean is kinder, the land refuses easy access and there are no harbours, as our evacuating troops learned to their cost in 1941.

How the civilization of Crete began is obscure. One fact is curious. It was mainly the eastern half of the island that developed and flowered into cities, palaces and gardens. This was apparently due, in the main, to the fact that it was from the east that the first influences towards advance arrived. Asia Minor, with its strange background of development, was the source of many of the influences that came to Crete. And some came from Egypt. Asia Minor was the sea coast that opened the central Mediterranean world to the inland folk of Sumer and the Mesopotamian plains.

Civilization developed in its earliest known forms in Sumer, where those enigmatic people, the Sumerians, founded city-states and built for the first time in human history an ordered society on an urban basis, defended by walls, armies and all that is essential



Stanford, London



Rischgilt Studios

Telemachus is seen here explaining the questions of Minoan



Nancy Jenkins

Mirabella Bay and Souda Bay are the only two large anchorages on the north coast of Crete, which has a very rugged coastline with few harbours. There are none on the south coast which is abrupt and without many beaches

to preserve human experiments in a world of envious barbarians. Versions of Sumerian life spread steadily westwards and gave even to Central Europe its first glimmerings of light, perhaps as early as 3000 years before Christ.

Elements of this Mesopotamian culture reached the coasts of Asia Minor and so filtered over, possibly in the form of enterprising adventurers, to Crete. Certainly the earliest culture of Crete appears in an already developed form and does not emerge by degrees from the crude aboriginal Neolithic life of the island. The first houses in Crete are like those of Asia Minor and pass through no primitive and intermediate stages. The first pottery of the Bronze Age in Crete is already developed and competent. And then Eastern Crete settled down to some 500 years of formative growth.

From 3000 to 2500 B.C. the first experi-

ments in the good life were made. During the second half millennium, from 2500 to 2000 B.C. the main elements of architecture, town planning, the arts of painting, pottery, jewellery and simple sculpture were tested and tried out. And during the same period was forged the outline of a system of writing which bore no relation to any other, either in Asia or in Egypt, the only other two places where a mode of writing had been independently invented. Thus Crete has, as one of its chief claims to fame, the credit of having devised a convenient and well-thought-out method of writing, either on clay tablets, or with pen and ink on papyrus and other smooth surfaces, which is a purely Cretan invention and not derivative either from Mesopotamian cuneiform, or from Egyptian hieroglyphic.

How did all this invention and skill develop in so small an island as Crete, and why?

The answer is, I think, that Crete had two



Dorien Leigh

A famous clay disk found during the excavation of Phaestos, which bears a spiral inscription stamped by small type, words being divided by lines. It is probably written in sacred script

great advantages—an almost perfect climate, and almost complete isolation, in wide seas, from the disturbing effects of raiding or piracy. Her climate is never too cold in winter, but hot enough in summer to produce rich fruit and harvests. The rainfall is slight but adequate and the island is amply watered by mountain streams (in contrast with Cyprus which suffers from droughts). Here was the perfect setting for a leisurely experiment. The irrigation problems of Mesopotamia were non-existent in Crete. There were none of the sand-storms of Egypt and little of its blistering heat. Crete was also well forested and provided with all the essentials for building. In contrast both Egypt and Mesopotamia lacked much; Egypt had stone but little wood; Mesopotamia had almost no stone and inadequate trees. So Crete started on her experiment with all the cards in her hand.

The second asset was isolation. As I have said, access to the north coast is dangerous, even to modern shipping: access to the south difficult owing to lack of roadsteads and harbours. Nor was piracy in those ancient times much of a menace. Shipping was little more than a mode of transport, and potential pirates were probably incompetent and few.

And so, safe from barbarian inroads, the Cretans feared no one, because there was almost no one to fear.

By about 2000 B.C. towns and cities had developed. At first there seem to have been independent cantons, rather like the Celtic cantons of pre-Roman Britain, each with its prince or baron, modelled probably on the city-states and their kinglets which had been a feature of Sumer from a very early age. Cnossos (near Candia), Phaestos (inland), Mallia on the coast not far from Candia, and other smaller townships grew up and became



Nancy Jenkins



(Top, right) *Eucalyptus* trees on one of the streams that come down the mountainside and keep Crete well watered. (Top, left) Olive trees, an orange grove and modern Cretan houses, which are identical with those of Minoan Crete. (Left) Olive groves and cornfield with, behind, characteristic Cretan hill country. (Opposite) A Cretan woman with the black headcloth commonly worn on the island. She holds a copper tray full of 'lady's fingers', a well-known Greek vegetable

wealthy on the produce of land and sea. Fishing was one of the local industries, but farming was also prosperous. All the urban trades and arts developed and gradually a widespread civilization emerged in which all the modern elements of culture developed.

During the two hundred years after 2000 B.C. so great was the prosperity of Crete that the barons or princes became imperceptibly transformed into wealthy potentates. On the sites of their humble houses, usually in the centre of populous towns, they built small palaces. But, unlike the palaces of the Egyptian or the Sumerian kings, they were surrounded by the dwellings of the people.

Cretan princes seem always to have been more democratic than those of the East and of Egypt. Nor did they combine with their democratic powers the autocracy of religious organizations. The Cretans had a strange and attractive religion of their own, unlike that of any other region, but it does not seem to have been accompanied by a large and parasitic theocracy, such as followed in the train of a Pharaoh or a Sumerian prince. Of Cretan priests we know almost nothing. One or two appear in some of the Cretan fresco paintings, but always in company with ordinary people. Nor has a Cretan temple ever been discovered. There are small shrines, and sacred caves in the mountains where offerings were made. There were also princely shrines, more private than public, in the palaces, usually in close association with the living quarters, like the private chapel of a Tudor mansion; but no such thing as a temple has been discovered. Cretan religion seems to have been a nature-cult based on monotheism. The great Zeus of Classical Greece was the god of Crete. He survives in Greek religion from Minoan days and is combined with a similar northern deity, of later age.

But the most remarkable aspect of this civilization was its art. The Cretans were observers of nature. The crocus, the lily, the flowers of the Cretan hills as they appear in real life abound on their wall-paintings and their delicate pottery. Walls were painted in fresco with perfect skill and survive today on the palaces of Cnossos and Phaestos or in fragments in the museums. Birds, such as the quail and the partridge, the duck and



Long Muear

the swallow; the dolphin and the octopus, shells and sea-plants adorn wall and vase. It is a world of delicate colour and form, subtly drawn, never exaggerated or misunderstood. Artists had created an art of their own which can never be confused with the art of another area. Cretan colour schemes are distinctive and skilful. Cretan forms are unlike those of other lands. Carving, too, as well as the art of the goldsmith and silversmith was very highly developed. Cretan goldsmiths could make goblets and



Toni Muir

(Above) Minoan lady—with her white skin and dark hair bound with strings of gold lilies and beads. It will be seen that she wears bracelets of the same design. (Opposite) *The Bearer of the Royal Goblet*—in Minoan art men are always shown as dark and sunburnt, while women are invariably pale. Note the embroidered loincloth and heavy belt

tankards, necklaces and crowns, which rival those of any age or place. The richer houses must have been well served with plate. Even the poorer people had their ornaments of gold and silver. But wealth and poverty were apparently not extreme in Crete. Judging by the excavated sites all men had adequate houses, some had larger and more sumptuous dwellings and princes had palaces. But there were probably no slums, such as abounded in oriental cities.

This great civilization grew wealthier and wealthier. And by 1800 B.C. it was as full as any that has developed in the Mediterranean. Reading and writing seem to have been

sufficiently widespread to entitle one to assume that the average citizen could do both. Every house of size had its written records and accounts. They have been found inscribed on clay tablets. There may also have been a literature, but we can only assume its existence. Music there certainly was because various types of musical instruments, such as flutes and harps, are known.

There was one notable gap. No trace has been found in Crete of the fortification of cities, other than for local police control—at gateways and palace entries. There are no coastal defences and there is no trace of an army or a navy. For Cretans relied on

their isolation and upon the fact that the mainland or island barbarians who could wish to attack them were too uncivilized to master the overseas trip to Crete and survive. And they were correct. From what we know of mainland Greece and the Islands at this time the natives were very simple barbarians indeed, with almost no knowledge of sea traffic above the level of simple shallops, hazardous to take a few miles from the coast. Egypt was the only power within reach which had warships, and the relations between Crete and Egypt seem always to have been friendly. Egypt was too absorbed in her Delta and in the dangers from Libya to enter upon distant conquests across the sea. And the Cretans seem to have known this and relied on it. And so in Crete we find the first European civilization to develop without wasting its resources on armaments and war. Vastly different was Sumer with its armies and its walled cities, hard put to it to defend them against marauding mountaineers and constantly assailing barbarians.

All would have been well with the Cretans had things remained thus. Their civilization would have flowered and prospered; their achievements would have been capped with masterpieces of art and architecture and perhaps from their mode of life might have emerged an example which other peoples could have followed. They might have made a large Island Confederacy where their mode of life was widespread. Indeed soon after 2000 B.C. they did settle on certain islands nearby such as Santorin and Melos, and traces of their trade are found as far afield as Syria and Palestine and Cyprus. But ambition is a human failing that nothing can contain. The Cretans gradually acquired knowledge of the mainland of Greece and what they learned appears to have tempted them to establish some kind of cultural control of the small townships of southern and central Greece. And cultural control meant also commercial control, for the Cretans, while not excessive producers, made things vastly attractive to the unsophisticated, and themselves needed certain raw materials in which their island was deficient, such as copper, tin, semi-precious stones, gold and silver. Mainland Greece drew supplies of such things from farther northwards. Tin, gold and copper abounded in the Danubian regions, gold was found in rich deposits in Transylvania, and many of these things came down the well-known routes into southern Greece where the Cretans could barter their cheaper ornaments for them, as do traders in undeveloped lands.



British Museum

But this Cretan infiltration of the mainland was a fatal move. It brought Crete to the knowledge of the mainland peoples. A Roman once said that "the more a thing is unknown the more magnificent it is held to be". And that was true of Crete. Rumour spread as to its 'hundred cities', its gold and



Camilla Alexander

silver treasures, its vast wealth. And, as always, exaggerated the truth.

Soon after 1800 B.C. Cretans seem to have settled to such effect in the one large native town of southern Greece, Mycenae, and in the equivalent town of central Greece, Thebes in Boeotia, that within little more than a century these two places had grown to great cities, with Cretan palaces and the Cretan mode of life fully established. Excavators find there all the elements of Cretan life, wall-paintings, pottery, treasures of gold and silver and the Cretan writing. A score of smaller places also grew up such as Tiryns, Nauplia, Argos, and even at Athens itself, a mere village of Bronze Age natives, there was a Cretan palace on the Acropolis that later was to house the Parthenon.

Almost without knowing it the Cretans, by their enterprise and curiosity, had founded something in the nature of an empire on the mainland, and yet they appear to have had no realization of the dynamic forces of barbarism which lay on the fringes of the areas in which they had settled. Mycenae and Thebes, each in its way the capital of a rich province, seem to have grown into opulence and culture without any preparations having been made to defend the life and very exist-

ence of the citizens against possible inroads. And in the mountainous regions just north of Thebes roamed powerful and as yet unorganized tribes who, little by little, became aware of the rich loot awaiting their enterprise.

We have little or no information as to how precisely the Cretans ruled and organized these mainland cities. Possibly Cretan princes, younger sons of their equivalent, may have been the leaders of the settlement. Soon from the ranks of the rapidly educated natives they took helpers and guards, fully devoted to the new life of Cretan civilization. Intermarriage ensued in a generation or two, and gradually there seems to have grown up a more virile stock than the pure Cretan. Certainly it produced men who rapidly became aware of the dangers of unisolated mainland life. They built superb city walls to both Thebes and Mycenae, and by about 1400 B.C. both these cities were city fortresses. Outlying military forts were also built to hold the approaches and a new aspect came over the Cretan settlements.

What happened next we can only conjecture, but constant attack by barbarians, more particularly upon Thebes, taught the citizens of the mainland

towns the art of war, defence and attack. Weapons were forged of great skill and beauty. While in Crete swords other than purely ceremonial weapons hardly existed before 1600, now both in Crete and the mainland we find swords, arrows and other weapons of sound manufacture. But as Mycenae and the new mainland civilization rose in strength and power so Crete declined.

One suggestion is that the mainlanders, like the tougher colonial breed that they were, turned against their mother country. The foreign strains in them had during the course of three or four centuries caused them to envy rather than to admire the country from which their origins had come. It was as if the American colonies in the 18th century had not merely revolted from Britain but had actually come over and sacked London and other British centres. Something roughly akin to that seems to have happened in Crete, and signs of ruin and devastation are seen.

On the other side of the Aegean Sea at the entrance to the Dardanelles stood the only other city of any consequence in these waters, Troy. Now Troy was in no sense either a city founded by Cretans or by Mycenaean. It is, indeed, better described as a citadel



Camilla Alexander

rather than a city. It stands on the end of a spur projecting on to the windy plain of the river Scamander that ends on the shores of the Dardanelles. In origin it was at first a simple village, one among many such, built by an agricultural people in the third millennium. Slowly this village grew in size and, after a time, it became a place of refuge against pirates who landed on the coast—a place where the scattered village-folk could concentrate in times of danger. And so walls were built around it.

As time passed, large movements of peoples, such as that of the Phrygians into Europe, and similar moves of tribes of European origin into Asia Minor, brought much trade to the plain. Also riches were derived from the ferry-service across the Straits. Troy emerged thus as a fortress guarding the passage over the Straits and controlling what slight water-traffic moved through the Straits from the Marmora to the Aegean. Wealth led to still greater improvements and fortification and soon, by the 15th century B.C., Troy became a famous and powerful 'strong point'. But the Trojans, unlike the Mycenaeans, were not ambitious, nor did they extend their domain. Kings of Troy emerged, and a

(Opposite) *Pillars and architrave of the Palace entrance at Knossos (restored). The pillars are of stucco and painted dark red.* (Above) *View through the door of the Hall of Shields in the Palace. A row of shields made of bull's hide is painted on the walls.* (Below) *One of the many magazines of the Palace in the basement. Here stand rows of jars, five or six feet high, which once contained oil and wine*



Camilla Alexander

royal dynasty. Like the Hittite cities of the hinterland of Asia Minor, Troy was one of the many fortresses of Asia. As such, and because of its vulnerable position, it came into conflict with the Mycenaeans, who were roaming the seas, searching for loot of victory. The famous Siege of Troy, perpetuated in the *Iliad*, records but one of many Mycenaean enterprises in these parts. The fact that the Siege was recorded in poetry gave it an importance out of proportion to historical facts. Mycenaeans had indulged in many similar enterprises which are recorded only in Hittite writings or in legends. The 'nine cities of Troy' found by the excavators are but nine phases of the life of a fortress. The last phase revealed by excavation proves the truth of the Homeric story, for Troy was sacked and burned and its wealth scattered. But wealth there certainly had been, for Schliemann, who began the excavations, discovered an astonishing mass of gold and silver treasure belonging to an age before the final fall of Troy.

It is not yet fully known what happened or why it happened. But it is clear that Mycenae, Thebes and the other mainland

towns and cities rose in power and strength at precisely the same time that the Cretan cities declined. One thing is quite clear: the whole character of Mycenaean cities had changed between their early period of Cretan development between 1600 and 1500 and that of 1500-1300 B.C. Soon after 1500 their rulers appear to have sensed a coming danger from the barbarous North, and possibly also from elsewhere. They built immense fortifications such as had never been seen in Crete. The mighty Lion Gate at Mycenae leads into a citadel which was one of the strongest in the world. Even today the ramparts of Mycenae stand in places over fifty feet in height. The mode of their building—from masoned stone of the hardest kind—indicates a profound architectural knowledge of a type quite different from that practised in Crete. While the main array of life was still largely Cretan there appear new influences and new tendencies which seem to come from within, from native sources which were now developing under the stimulus of Cretan invention. The master had taught a pupil who was now finding his own modes of expression, his own inventiveness and his own organization.

Clay vases of various periods from Knossos. They date from 2200 B.C. to 1400 B.C.



Dorion Leigh



Rhodes

Notes and Photographs by

R. D. STERN



Besides being the largest and the most important of the Italian island possessions in the Levant, Rhodes has an imposing past. Not only did she construct one of the world's seven wonders, the Colossus, but she achieved great fame for her commerce, political institutions, and the School of Oratory where Cicero studied.

The town above is Lindos; and on the left is a Turkish street with flying buttresses as a defence against earthquakes.



The Greek cobbler (above) lives, like the whole Greek population of about 8000, outside the walled city. This was a law enforced by the Knights of St John when they ruled the island and was later upheld by their successors the Turks, who conquered Rhodes in the 16th century and held it until 1912.

In the Jewish courtyard (above, right), as in most Rhodian courtyards, the symbol of the sun-god Apollo is worked into the floor. The Jews were granted permission to live inside the walled city with the Turks, and now some 3000 of them do. (Below) One of the buildings of the Knights of St John who, during the 13th to the 16th century, imposed a lasting influence on the architecture and customs of Rhodes



Urumchi: Capital of Chinese Turkestan

by MILDRED CABLE

The city of Urumchi, important though it has been for generations as a centre of the caravan trade of Central Asia, has remained all but unknown to the Western World until recently. Miss Mildred Cable, part author of The Gobi Desert, and one of the few Englishwomen who have ever ventured into this remote region where Russian and Chinese power reach out towards one another, gives an account in this article of life in the city today against its historical background

CHINESE Turkestan is a vast territory embracing deserts, mountain ranges and strange rivers which rush with torrential force from the glaciers above, tear their way through the sand and grit, then bury themselves in some desolate salt-ringed swamp. It also contains a large number of small oases and a few big towns, lying at great distances from each other but linked by the ancient and historic trade-routes of Central Asia.

The inhabitants of these towns supply a key to the historical background of the country and, while I was living among them, a whole picture of bygone days re-formed itself in my mind.

The men of the oases are descendants of ancient war-like tribes who perpetually disturbed the less sturdy nations, seized their territory and drove them westwards. One horde after another thus swept over the area north and south of the Tianshan and held the oases, the pasture-lands and the caravan

routes until such time as a yet more warlike race overcame their resistance and scattered them in turn far and wide.

None of these peoples was wholly dispersed, nor wholly absorbed by other tribes; and to this day national strains and characteristics, indicative of deep-rooted racial traits, persist among the men of the oases and the moving population of the trade-routes. Lusty, assertive, arrogant men they are, typical of the warrior tribes from whom they are descended. The true conquerors of the country, however, are the non-aggressive, peace-loving Chinese, instinctive colonizers, farmers and indefatigable traders.

Although forced to live in close proximity in the large Gobi oases, these people of varied racial elements do not love one another, and their way of life, their everyday habits, their dress, their manner of preparing food and of eating it remain totally different and in strong contrast one to another. There is very little





From Mrs Eardley Todd

(Left) *Hung miao-dz (The Red Temple) which stands a few miles from Urumchi, and is of such fame locally that it is spoken of a hundred times as a destination when Urumchi, or Tihwa as the Chinese call it—is mentioned only once. (Above) Looking down from the Red Temple on the city of Urumchi, surrounded by arid spaces over which desert storms sweep. (Opposite, top) Public garden, and (bottom) main street in Urumchi*

intermarriage between them; their forms of religion are antagonistic, and they each speak their own inherited mother tongue with only a superficial knowledge of their neighbours' languages.

The *bazaar* of a town situated in any fertile area is a revelation of racial adaptations and antagonisms. The centre of town life is the Chinese yamen where the District Magistrate administers justice, and the company of soldiers who form his bodyguard, police the town and preserve order, is quartered. Only second in authority is the principal mosque where the Moslem people discuss matters of primary importance to themselves. Severe ecclesiastical discipline is exercised by

the inner circle of *Hadjis* (those who have made the pilgrimage to Mecca) and *Ahungs* (title of respect: *Ahung*, too, often indicates a Moslem official) and disobedience to their orders is checked by such punishment as flogging and tying up the victim so as to cause extreme physical pain.

There are definite quarters of the town inhabited by Chinese only; others where all the houses are Turki; others again where *Tungans* live, not to speak of the serai-quarters where Mongolian, Kazakh (or *Qazaq*), Tibetan and Tartar travellers meet. The *bazaar* is the one place where all meet on common ground—not wholly in a spirit of competition, but with a sense that in the business world each one has



From Mrs Eardley Todd

a contribution to make to the general well-being of the community.

The largest town of Chinese Turkestan is the modern city which stands on the site of old Beshbaliq, the name of which constantly recurs in the historical annals of Dzungaria. Its official name of Tihwa (City of Enlightenment) is used by Chinese only, and even they have a more familiar name for use in ordinary talk. On the main travel roads, the Chinese bound for Tihwa will always speak of their destination as Hung miao-dz (The Red Temple). This is an insignificant spot a few miles from the centre of the town but it has succeeded in establishing its claim to give a name to the whole locality,

and Hung miao-dz is spoken of a hundred times where Tihwa is mentioned only once. The Turki, Mongol and Tartar people use no Chinese name but refer to the town as Urumchi only.

Urumchi, large and important as it is, has always been essentially an Asian centre, gathering to its market all the merchants of the caravan routes, yet remaining almost unknown to the Western world. Its importance has been largely determined by its location, for it is supplied with abundant water and good fuel—those two scarce commodities of oasis life. Urumchi lies on the main North Road connecting Hami (or Qumul) with Tah-cheng (or Chukuchak). It is situated



Mildred Cable



Mildred Cable

Urumchi has always been essentially an Asian centre, gathering to its market all the merchants of the caravan routes. This visitor (left) comes from a neighbouring oasis. (Above) A shy Mongolian Lama

on the bank of a wide, tumultuous and un-navigable river, and over it towers the lofty summit of the Bogdo Ola (Mount of God), which is the highest point of the Tianshan range. The lower slopes of the Bogdo hold lovely lakes, cascades, green pastures jewelled with many wild flowers, and banks on which the mountain strawberry grows in abundance; but the town itself is far enough from the mountain to be surrounded by arid spaces over which the desert storms sweep, carrying clouds of dust and grit into its streets.

In summer Urumchi is hot and smelly, in the winter its roofs, streets and numberless alleys are covered by a heavy pall of snow, but in the transition seasons of spring and autumn the streets become expanses of the vilest mud. For one brief hour after sunrise and again in the evening twilight, frost hardens the surface and walking becomes possible; but all through the day only the most agile can get about, and that by balancing themselves on the narrowest strips of



From Mrs Eardley Todd

A group of young girls on parade in Urumchi to commemorate one of the fallen leaders of the rebellion

harder ground and leaping from one boulder to another across spaces of liquid mud.

One of the interesting things to watch in Urumchi has been the rise of level in the town. It has been impossible for the inhabitants to dispose of their domestic rubbish in any other way than by dumping it on some waste land. Heavy falls of snow have hidden the mounds of refuse, and all through the long cold winter it has seemed a simple matter to throw cinders just outside the courtyard door. The result has been to raise the whole street level, and most people have to go down several steps to reach their front door.

The houses are lightly built and have flat mud roofs, so that when the snowstorms come, all available men are commandeered to clear them of snow. When this is neglected, the snow percolates through every crevice and quickly melts, running down the inside walls in little rivulets.

Within the walls of the city the business houses are mainly Chinese, but the town is flanked by two important suburbs. One of these is almost entirely owned by the Tungan population. These clever, enterprising people are Chinese-speaking Moslems whose forbears came from Western lands, bringing with them

Arabic speech and racial traits the remains of which still strongly impress their descendants and make of them a colony which in all but speech remains alien to the Chinese. Their women wear a distinctive dress, are seldom seen in the streets, and even then go partially veiled, and have never adopted the custom of foot-binding.

The progressive, lively and colourful side of Urumchi life is to be found in the moving crowds which throng the southern suburb, known as the 'Foreigners' Quarter'. 'This is an open trade *bazaar* and it is here that Chinese, Turki, Kazakh, Siberian, Tartar, Mongolian, Uzbeq, Tibetan and Manchurian merchants meet and exchange produce. These varied people form a Central Asian crowd of unparalleled interest. Each man wears his distinctive dress, follows his own customs and handles his own particular line of business in a manner handed down to him by tribal custom. The Turki sits cross-legged on a low counter surrounded with mounds of dried fruits and flanked with piles of coarsely woven saddle-bags. The Tartar, his head covered with an embroidered skull-cap, his cheeks ornamented with fancy-patterned clipped whiskers, his waist bound with a green

silk kerchief and his legs encased in magnificent riding-boots, spreads an attractive *devanture* of crimson and azure Siberian crockery and gleaming nickle-plated samovars and kettles. The Kazakh has sold his particular goods at dawn on the cattle market in the shape of sturdy steppe horses and he is a customer coveted by every merchant, for he wants the best goods on the market and cares little what he pays so that the wares are pleasing to him and will impress his nomad callers with their magnificence. The shy Mongolian and the distrustful Tibetan move self-consciously among the sharp townsfolk, profoundly distrusting their clever ways and too rapid calculations, and slip away unobtrusively to the inner courtyards of certain important firms which are agents of renowned coastal furrier houses and draw their supplies from hardy nomad hunters to retail them among the fashionable folk of Peking and Shanghai. All these types congregate round the stalls, but the middle of the road is thronged by heavy freight carts from Central China, light vehicles from the town cart-ranks, long strings of camels, numberless men on horse-back and bullocks ridden by the Kazakhs.

For more than a mile the pedestrian elbows his way through the crowd before reaching the gateway behind which lie the spacious grounds of the Soviet Consulate. This compound has witnessed radical changes, and before the time of the Russian Revolution, the Consul's bodyguard was formed of scarlet-coated Cossacks who rode furiously down the main road scattering the traffic right and left. The days of the galloping Cossacks are now passed and plainly clad men of the Red Army have replaced them. Inside the compound men and women now call each other *tavarish* ("comrade") and each must perform the task required by the public weal, to which central authority has appointed him. A few years ago the Russian administration established a department store in the South suburb where the wives of men in Consular employ were requisitioned and appointed to take their turn at serving customers or in giving assistance in the counting-house. The shop was stocked with goods produced in Siberian factories, the establishment of which formed part of Russia's five-year-plan of industrial development. The counters were spread with a great variety of printed cotton goods and gay kerchiefs with

Every kind of dress is seen in the streets of Urumchi, from the traditional padded winter garb of the Tungan (left), to the summer trousers worn by the mule as a protection against flies



Mildred Cable



which Siberian women cover their fair hair and which frame so becomingly the pink-and-white face of the peasant girl. The *étalage* of crockery was as gay as were the prints, and its brass kettles and hand basins stamped with the trade mark of sickle and hammer were both strong and remarkably cheap. Snow-boots were another speciality, and the lady from the Consulate would serve customers either with a pair of the finest felt overshoes or with heavy felt boots which reached the knee and secured the wearer against frost-bitten toes.

The best houses in the Foreign Quarter were occupied by *émigrés*, Russians who were fiercely opposed to the political regime of their own country and who, at the time of Revolution, deliberately chose lifelong exile and travelled westward through hardship and danger to the frontier of Chinese Turkestan. While the greater number moved on, as far east as Tientsin and Shanghai, there were still enough left to establish large colonies at Chuguchak, Kulja, Urumchi and in several other oases. Among them were many cultured people of artistic ability and who spoke several European languages freely. They earned a precarious living by any means which came to hand, yet always kept the spirit of sociability alive in spite of difficult circumstances.

Of late years Urumchi has endured hard times. The strong and able Provincial Governor Yang Tseng-hsin was murdered in 1928 at a feast where he was a guest, and he was replaced by a man of weak and vacillating character. When conspiracies arose in this man's *entourage* he was unable to handle the situation and only succeeded in alienating his friends and increasing his enemies. Finally he only escaped arrest by fleeing in the most undignified manner. The Tungan rebellion was in full spate and there was no one able to seize the reins of government and control the situation. The position was one of extreme peril, and in order to stabilize the existing government it was necessary to ask help of the strong neighbour Russia. Response was immediate but, needless to say, certain privileges were required in return for assistance given.

The possibility of rapid intercourse by aeroplane between Moscow and Urumchi has now brought the two cities into closer contact

and will certainly facilitate commercial and cultural intercourse. For several years there has been exchange of goods, the Russians taking large supplies of raw cotton from Turkestan and supplying textiles and metal articles in return. Culturally the influence of Russia is now considerable and the Russian language is taught in the higher grade schools of Urumchi and other large towns. Facilities are also extended by Russia for the admission of Turkestan students to her Universities, Colleges of Animal Husbandry and Technical Institutes. All these things have helped to encourage intercourse between the peoples concerned.

The nearest British Consulate has been fifty-four stages from Urumchi in the town of Kashgar and it therefore follows that British influence has been slight in the town and area. A few British missionaries have lived and worked in Turkestan, but visits from British Consular Officials have been few. It is now reported that a British Consulate is to be opened in Urumchi and this should do much to further intercourse and promote understanding between the people of Turkestan and those of Britain.

A Turki child whose interest in the photographer has lured him away from his family



From Mrs Eardley Todd

Tasmania

Island of the Southern Ocean

by KATHLEEN E. GRAVES

In considering the English-speaking countries of the Southern Ocean and their contribution to our common heritage, we are sometimes apt to forget the important part played by Tasmania. Mrs Graves, a citizen herself of the island, here describes its discovery and colonization, its great variety of natural beauty, and the growing significance of the agriculture and industry which has gradually been built up there

TASMANIA, an outlier of the Australian continent, has been settled for only 140 years. But it was in 1642, when the Civil War was raging in England, that Abel Tasman, the Dutch navigator, sweeping across these lonely uncharted seas before the gales of the 'Roaring Forties', first sighted the high blue peaks of a new land rising above the horizon ahead. He thought it to be part of Terra Australis Incognita, which the Dutch had named 'New Holland', the unknown southern continent, and veered away to the south, keeping land in sight on his port bow, rounding the storm-swept south-western extremity and sailing up into the sheltered bays of the east coast. Coming of a people more interested in trade than in idle possessions in empty lands, he put ashore for water, gave the coast a hasty scrutiny, and decided this was no Spanish Main or rich Peru to be exploited. That his impressions were quite erroneous time was to prove, but he sailed away into the north leaving the island unclaimed, merely marking it on his charts and giving it a name—Van Diemen's Land—in honour of the governor of the Netherlands Indies who had sponsored his expedition.

The island lay forgotten for another 130 years, until 1777 when Captain Cook visited it. But he, too, landed only for water on its eastern coast, made contact with its inhabitants and sailed away. Van Diemen's Land and its shy black aborigines returned to primitive peace, disturbed only by the passing sails of other navigators, French and English, rounding its coasts at long intervals on their way up to the east of Australia, for the existence of a strait between Van Diemen's Land and the mainland was not yet realized.

Then in the early years of the Napoleonic Wars, England, who had then formally taken possession of New South Wales and established a convict settlement there, noted the

presence of French ships in these southern waters and thought it prudent to secure this far outlier which Captain Flinders had discovered to be an island.

The colony in the beginning was a dependency of New South Wales. During the first ten years this isolated settlement experienced the rigours of famine: supply ships failed to arrive and prisoners were turned loose in the bush to fend for themselves by catching game. From 1810 detachments of regular troops from England were drafted out, and successive military and naval Lieutenant-Governors inaugurated systems to encourage free settlers. By 1820 a few enterprising English and Scots had taken up large tracts of the most accessible grazing land and built themselves substantial homesteads, living in almost feudal state among their flocks and herds with numbers of assigned servants as stockmen and labourers.

In 1853 the island was renamed Tasmania, and free settlers began to arrive in greater numbers.

It was found that sheep flourished on the native grasses of the plains and in 1820 Merinos of a famous New South Wales stud were imported. From that time Tasmanian wool assumed commercial value. By 1838 there were a million and a quarter sheep in the colony, which was exporting some of the best wool in the world. The number of sheep in the island is now about three millions. Most of the open country stretching from the river Derwent in the south to the river Tamar in the north had been taken up for grazing. By 1840 settlement had spread north-west, through marshlands which when drained produced heavy grain crops. With the influx of free settlers clearings were hewed in the great forests on the north-west coast where the rich red soil yielded up to twenty tons of potatoes and sixty bushels of wheat to the

acre. Though this heavy virgin yield has not been maintained, big crops are produced year after year in this good land. And it was in the '40s, in the south-east, that the first apple trees were planted in the heavy clays of the Huon valley. Coal was discovered soon after settlement, gold in payable deposits in 1851, and twenty years later a mountain of tin was found at Mount Bischoff. Then silver-lead was discovered, and at Mount Lyell in the west what was to become one of the great copper mines of the world. Later, wolfram, silver, iron, osmiridium and nickel were found in rich deposits.

A hydro-electric scheme to utilize the power of the rivers flowing from the Central Plateau supplies electricity for the industries of the island—the mines, the electrolytic treatment of zinc ores, woollen mills, paper-pulp mills, confectionery, cement and de-hydration factories, breweries and cool stores, and serves the towns and even many remote farming districts with cheap power.

* * *

When Tasmania was discovered it was inhabited by wandering aboriginal tribes. Captain Cook's surgeon wrote of "The fauns and satyrs dwelling in the woods and hollow trees", and said "They are a mild and cheerful race, less wild than many savages, but devoid of activity and genius". Isolated by nearly 200 miles of rough seas from the mainland native, who was of entirely different stock, the Tasmanian remained as primitive as the Palaeolithic hunter who roamed Europe 100,000 years ago using handleless stone flints and raising no permanent dwellings. It is known that he was of a negroid stock, almost identical with the Papuan, the Melanesian and the Andaman Islander. Originating in Asia, his people spread by way of Arabia into Africa, and through Malay and Java into New Guinea, Melanesia, possibly Australia, and from thence to Tasmania. Here, cut off by the sinking of the land forming Bass Strait, he may have existed from the time when the ancestors of the white race were following the retreating glaciers into the north of Europe.

With white settlement the fate of this primitive people was sealed. Pushed out of their happy hunting-grounds, on the open plains, their game diminished in numbers, their tribal demarcations

obliterated, they finally became extinct in 1876.

* * *

Tasmania may be divided into three main regions: the open plains of rolling sandstone covered with native silver grass and scattered clumps of trees free of undergrowth, like a savannah, extending through the midlands to the east coast; the north and north-western districts of heavy clay and loam extending into rich red basaltic soil; and the mountainous region of the central plateau running away to the west and south-west, with an outlier in the north-east.

In the first two regions the climate is mild and has been compared with that of Europe where it borders the Mediterranean. The plains carry flocks of sheep famous for their wool. The homesteads on the estates—many built during the first half-century of settlement of local freestone by convict labour, often with walls over two feet thick to withstand siege by blacks and bushrangers, their interiors finished with imported cedar or native blackwood—are the best type of colonial architecture.

The vegetation of this eastern and north-western region is similar to that of Australia: chiefly eucalyptus, its thick cuticled evergreen leaf exuding oil to withstand heat and drought, and acacia, which includes wattles with their golden glory of spring blossom, and blackwood, the timber of which is like Spanish mahogany. In the sheltered valleys of the





(Above) Looking down from the slopes of Mount Wellington on the wharves of Hobart. Most of the great liners that come in to these wharves are collecting cargoes of apples. Hobart has one of the finest harbours in the world and is now to have one of the most spectacular bridges, which will span the river Derwent from Government House Point to Montague Bay.

(Left) Cadbury's chocolate factory at Hobart, whose supply of milk is obtained from the rich dairy farms which neighbour the capital. Another asset to the factory is the hydro-electric power so fully developed in Tasmania. (Opposite, top) Among Tasmania's most prosperous industries is the milling of paper: these newsprint mills are on the Derwent, 22 miles from Hobart; (bottom) Queenstown, centre of a mining industry which produces copper, silver and gold. The vegetation on the surrounding mountains was destroyed by sulphur fumes from the smelting of the ores



By courtesy of the Agent General for Tasmania

By courtesy of the Agent General for Tasmania



From the author





From the author



From the author



From the author

The variety of Tasmanian scenery is demonstrated by these four pictures. (Opposite, top) The Midland Hunt Club moving off to draw in the open, grassy, gum-treed central plain. Their quarry may be a fox or kangaroo, or sometimes a 'drag'. On this plain are most of Tasmania's biggest country homes; (bottom) a farm in the North West, where the richer, low-lying land has been cleared and cultivated. The distant ridges are covered with gum forests. (Left, top) Dove Lake and the twin peaks of Cradle Mountain; (bottom) one of Tasmania's vast waterfalls surrounded by tropical vegetation



Dorrien Leigh



By courtesy of the Agent General for Tasmania

Dorien
Leigh

Apple orchards and an old Tasmanian fruit-farmer. Though the island produces a good crop of apples the growing of them is not easy, and many English settlers who tried to make a living out of apples after the last war failed.

(Opposite) On most of the big sheep farms the shepherds live in cottages like this one.

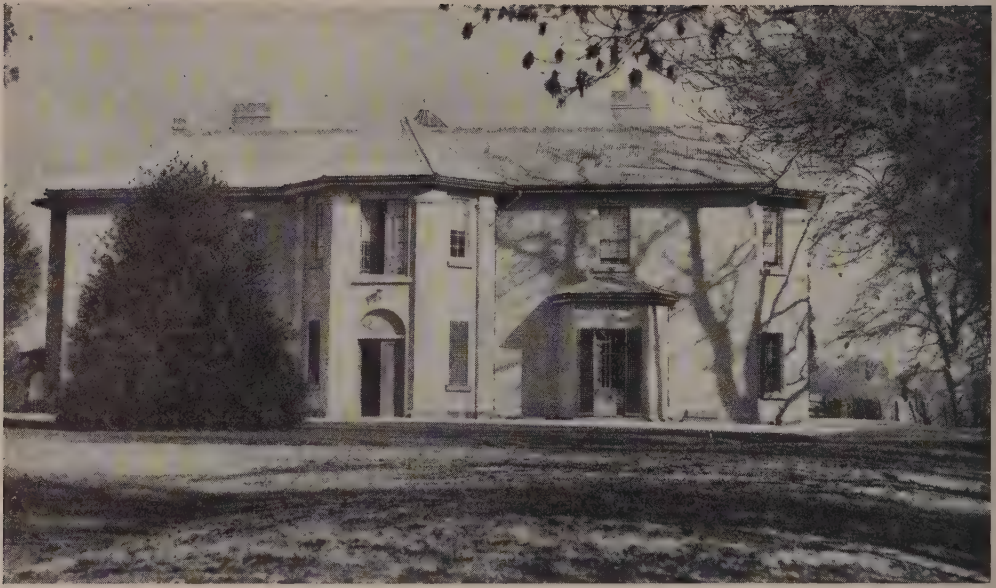
Sheep sales are held all over Tasmania, and are great meeting places for farmers and station owners. These cross-bred lambs are waiting at a siding for a train to take them to market



courtesy of the Agent General for Tasmania

Dorien Leigh





From the author

One of the country houses built for early settlers on a pastoral estate in the early 19th century. Within them is often a good deal of fine woodwork, cedar doors and bookcases. The view opposite shows apple orchards in the Huon River district

north-west and south-east the eucalyptus reaches its full majesty—great gums, of which there are 150 varieties in Australasia, soar to over 200 feet and yield valuable timber, known as Tasmanian hardwood, of great strength and durability. The heavy red basalt soil of Tertiary lava flows hundreds of feet thick in parts of the north-west, produces crops of potatoes and oats, and carries pasture for dairy herds and the fattening of lambs, while in the river valleys orchards flourish.

The third, mountainous, region is entirely different. Uncleared and uncultivated, it yields only rough summer pasture for sheep and cattle, and the few settlements it contains are in the mining areas of the west. It extends from the edge of the Central Plateau which rises like a great rampart from the plains to a height of 3300 feet, sweeping away in wild moors to the west, rising to peaks of over 5000 feet and undulating to the south-west into a region so wild that many have perished in attempts to penetrate it. It is a region of ancient glaciation, holding in its depressions many tarns and lakes walled by cirques and dammed by moraines, the largest of which is the Great Lake with a circumference of ninety miles, and the beautiful Lake St Clair which lies between mountain peaks. In the valleys are heavy rain-forests of evergreen

beech and pine, and up to the 3000-foot line grows a beech which sheds its leaves in autumn—the only deciduous tree of the Australian region. The pines are celery-topped, a slow-growing yew with a valuable hard timber, and King William, a cypress with a beautiful pinkish soft timber. In the wild regions of the south-west a curious saxifrage called horizontal scrub grows by interlacing in an impenetrable thicket some feet above the ground through which it is impossible for a man to cut his way.

In midsummer the uplands are knee-deep in flowers growing amid a golden sedge called button-grass. There are pink everlasting daisies, gentians, sweeps of pink and white boronia, scarlet-belled blanfordia and scarlet-flowering waratah. Queer grass trees called richea, looking like palms at a distance, and many heaths grow in this sub-alpine region, which, with its curious and beautiful vegetation, is regarded by scientists as part of an ancient Antarctic continent once reaching to South America.

* * *

The eucalyptus forest, "The fragrant flowering forest", which Mitchell, the Irish exile, wrote of in his *Jail Journal*, is full of birds which feast on the honey in the pale

filmy blossom. The most brilliantly coloured are of the parakeet family which includes the rosella of scarlet, green and gold plumage, and the blue-winged grass parrot, also a handsome black and sulphur-yellow cockatoo. Two other characteristic species are honey-eaters with bright olive-green and gold plumage, and flycatchers. The island has many native birds belonging to the same orders as British birds, sometimes with different plumage and notes.

When the island was settled it abounded in game; in the open grasslands kangaroo, wallaby and emu; and black swan and duck swarmed on the lagoons and inlets. The emu has been exterminated, and the other game driven into the unsettled districts. But in the mountains the marsupial life of Tasmania is still abundant. The two carnivorous marsupials of the Australian region are only to be found in Tasmania: the "tiger" (*Phylacinus*) and the "devil" (*Sarcophilus*), both now rare and hiding in the inaccessible wilds of the south-west. Two curious monotremes (egg-laying mammals), the platypus and the echinida, or porcupine, are still numerous; these, with the marsupials, are the most ancient form of mammal life in existence in the world today; their contemporaries in Europe are only found in fossil

form in the ancient strata of the Mesozoic era.

In 1864 the English brown trout was introduced into Tasmanian lakes and rivers, and later the rainbow trout was released; both flourished. In the northern rivers a native freshwater crayfish exists, the largest in the world, and in the waters of the highland lakes the anaspides, a mountain shrimp of a long-past geological age, abounds as another living fossil—a delight to scientists.

* * *

Though Tasmania has been settled for a short period, perhaps no country resembles the motherland so much as this remote island. There are rich meadows and ploughed fields, hedges of hawthorn, blackberry and wild-rose, willow-fringed streams, and white stone farmhouses surrounded by elms and poplars. It is only when one lifts one's eyes to the horizon and sees there the blue palisade of mountains soaring up, and the swarthy olive-hued bush on the foothills, that one realizes this is not England, but something of its atmosphere transplanted into a wilder and freer landscape not yet fully tamed. Perhaps when the war ends there may be a further influx of settlers to this temperate island, only half of which has been alienated, and which, with an area only a little less than Scotland's, has less than one-twentieth of her population.



From the author

A Bee-Keeper's Story

by F. C. E. KNIGHT

MANY people think that the keeping of bees is a modern practice, dating from the time of our grandparents or thereabouts. Recollection of any earlier account of them will probably be confined to the story of John the Baptist living on locusts and wild honey, or to the riddle put by Samson to the Philistines: "Out of the eater came forth meat, and out of the strong came forth sweetness." But Aristotle was one of the first to study and describe the division of labour among bees, besides other phenomena such as the filling of honeycombs by regurgitation and the carrying of 'beebread' on their hind legs. Both Pliny and Cicero tell the story of Aristomachus, who lived a secluded life and spent sixty years studying bees. Virgil gave a lucid description of a hive made of osier and covered with clay. It must have closely resembled the straw skep, which was in common use in this country up to the middle of last century and even now may still be found in country districts.

The introduction of a hive which could be opened at the top, and had combs fixed in movable frames suspended from cross-bars, marked the beginning, if not of modern, anyway of commercial apiculture. Various types of hives with frames and open tops have been described from the 17th century onwards, from countries as far apart as England, Switzerland, Austria and Greece. Langstroth, 'The father of American Apiculture', made the far-reaching discovery in the year 1851 that bees would put up with a so-called 'bee-space' all around the frames suspended in the interior of the hive. Bees will not as a rule tolerate an empty space; if it is a large space they will build brace comb across it, and if small will fill the cracks with a sticky substance called propolis, which they collect throughout the year, but especially during the autumn, from trees and shrubs which exude the substance.

* * *

The abandoning of skeps in favour of the modern hive was a natural development. In

the first place the gathering of honey from a skep meant killing the inhabitants by means of burning sulphur. Many farmers have told me how their parents "did the bees in with brimstone". This barbarous custom meant of course the destruction of the strongest colony, which would have collected most honey, and the wintering of weak colonies—definitely a bad thing from a breeder's point of view. Besides this the bee-keeper was unable to examine his charges for signs of disease, such as foulbrood, etc. This meant that appropriate measures could not be taken in time, often resulting in whole apiaries being wiped out for lack of diagnosis and early treatment. Readers who know nothing of bee-diseases need only be reminded of the havoc wrought by the so-called Isle of Wight disease which raged during the first twenty-five years of this century. About 1920 a cure was discovered, but in the meantime whole apiaries were lost and not even the cottager's hive was spared, so that today the one- or two-hive man is rather the exception than the rule.

There is an enormous literature of bee-keeping, starting in the 17th century. One of the earliest books is by Charles Butler, *The History of Bees*, published in 1634. In the last twenty years a great many fascinating and instructive works have been written.

* * *

The inhabitants of a hive consist of a queen, up to fifty thousand workers and about three hundred drones. The span of life allotted to the latter is short; they are born in the spring, and, because they are large eaters and do no work, they are dragged out of the hive in late autumn to die of exposure when not actually stung to death. This slaughter conserves food stores for the rest of the colony, but it perplexed early bee-keepers, who asked themselves how the queen could start laying fertile eggs in the early spring before drones were about.

During the 18th century it was discovered, independently in England and France, that a queen mates but once in her life-time and



J. H. Wright

Bumble-bee in flight, reaching forward to extract honey from the petals of a lupin. The loaded pollen baskets can be seen between the tail fur and hind legs.



Edwin Way Teale

Attracted by the petals of the sunflower the humble-bee has settled on the outer florets which provide the nectar

stores the twenty-five million spermatozoa she receives in a special organ where they remain alive for the rest of her egg-laying existence. The strangest fact about the reproductive

process in the life of the honey-bee is the phenomenon of parthenogenesis discovered in this insect by Dzierzon in 1845. This means the production of normal mature individuals

from unfertilized eggs, and happens when the queen lays unfertile eggs which develop into drones. As the eggs pass the opening of the duct leading from the spermatheca, the queen releases a few spermatozoa when laying an egg into a worker cell but none in the case of a drone cell. No definite theories have been advanced and proved concerning the queen's power of discrimination, but it may be supposed that the stimulus of the larger drone cell releases a different reflex from the one operating when her abdomen touches the narrow entrance to a worker cell. The different size of cell is related of course to the different sizes of the mature insects. Both the worker and the drone cells are hexagonal, but the latter are larger. The queen cell, on the other hand, is round and looks like a small thimble built onto the edge of ordinary combs. But how can a queen be reared when there are only two kinds of eggs? The answer is that the egg which will develop into a queen does not differ cytologically from one which will produce a worker; its fate depends on the kind of food the larva receives upon hatching. If you take, for instance, a two-day-old larva out of a worker cell and place it in a queen cell, then the worker bees will feed it on a substance known as 'royal jelly' and a perfectly normal queen will develop. If you take an older larva, a distressing individual known as a laying worker, who can only lay infertile eggs, will be produced. This shows that a worker bee is a sterile female whose fate was shaped by environment. It sometimes happens that a queen exhausts available spermatozoa, when she will only lay infertile eggs. It is then time for the bee-keeper to re-queen the colony. In practice this rarely occurs, as the male gametes suffice usually for the one and a half million eggs laid during the useful life of the queen. According to Snodgrass she lays at her peak two eggs a minute; about two thousand a day, representing a weight four times as great as that of her own body. This entails a great strain on her organism and the bee-keeper takes care to select a queen from a prolific laying strain.

There are many different races of bees, ranging from solitary bees of purely academic interest, to black bees, Carniolans and Italians. Black bees are our own indigenous strain, but they have cross-bred so extensively that about the only place where they are found pure is in Scotland. Italians are preferred by commercial bee-keepers as their queens are prolific layers, the workers gather honey most assiduously and they are not so inclined to swarm as the Carniolans. The fact that one strain of bees are better gatherers

than another is most important to anyone whose livelihood depends on bee-keeping, for according to Professor Koons a bee can only carry 0.35 of a grain of honey on each flight, and this represents about twenty thousand flights for each pound of honey. Bees fly three miles and further from their hives in search of nectar, then stay half an hour or more in the hive before issuing forth on another flight, and yet a hive may increase in weight by five or more pounds in a single day.

* * *

Years ago I was given an empty hive, and with the advent of every spring my hopes were renewed that I might hear of a swarm to inhabit it. I knew little about the practical side of bee-keeping and besides disinfecting and painting the hive had done nothing about fittings. Imagine my excitement one sunny morning in June when I heard a peculiar humming noise as I was haggling with a neighbouring farmer about some fat ducklings. "Bees" flashed through my mind, and in a trice I was across that field and saw a cloud of bees beginning to settle on a branch of an old apple tree. I soon found out that the farmer was not interested in bees and I finished up by buying the swarm for two half-crowns. I told him it was unlucky to sell bees, but as he was not superstitious it was I who was unlucky!

I hurried home, loaded the hive onto the car and returned, not knowing at the time that I could just as easily have hived them into a sugar-box or a skep and then transferred them. I placed the hive beneath the branch from which the bees were hanging in a large grapelike cluster, took the lid off and shook the bees into the empty hive.

By rights I should have shaken them onto a board covered with a cloth sloping up to the entrance of the hive, when they would automatically walk uphill into their new home, with the queen generally hurrying along over the backs of her followers. I was a bit sceptical about this performance, and being afraid they might take wing I made sure of getting them into the hive.

I was lucky to find the swarm still in position on my return, for one can never be sure of how long they will stay in one place. I have known them hang all day on a gooseberry bush, on the other hand I lost a swarm last summer which clustered for less than twenty minutes in a privet hedge. It all depends on how lucky the scouts are who are searching for a new home, such as a hollow tree, while the swarm is clustering.

I left the hive where it was to collect any



(Above) With its long proboscis the bumble-bee is one of the few insects capable of extracting deep-lying honey from the red clover. (Opposite) Honey-bees spend some thirty minutes on the combs between flights during the honey flow



stray flying bees and returned home only to be soundly rated for buying something that wasn't really for sale. Roughly the facts concerning the ownership of swarms is that once the original owner of the bees has lost sight of them, then they become *ferae naturae* or wild animals and can be claimed by anybody.

The bees took to their hive and that night I blocked up the entrance with perforated zinc, tied a rope round it and brought it home where I set it up dead level in the orchard.

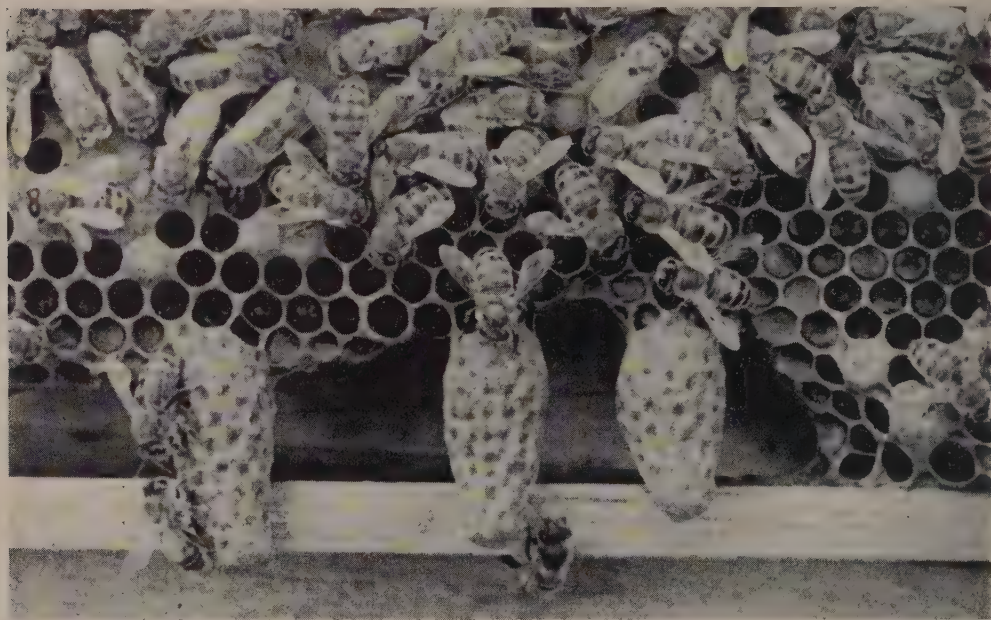
* * *

Bees are perfectly harmless when swarming, as they fill themselves so full of honey before issuing from the hive that they are quite incapable of bending their abdomen sufficiently to sting. This instinctive action is essential to their survival as they will be going to a new home with a completely bare larder. On the other hand hungry bees can be most unpleasant and a bee-keeper might well defend his homestead by flinging combs covered with bees at attempting aggressors. This form of attack or defence was resorted to with some success in the Middle Ages, but I

wonder whether International Law would sanction its present-day use?

The next morning I placed a few branches in front of the alighting board so that bees, upon first issuing and finding an obstruction, would mark the spot of their new home. By midday I filled the brood-chamber with newly bought standard frames and, before placing it inside the hive, puffed a little smoke into the entrance to subdue the bees. This use of smoke for the subduing of bees has been resorted to for hundreds of years. It makes the bees rush to their stores of honey and gorge themselves—which they could not do in my case, as there was no honey. Actually the bees had built two pieces of comb in the preceding night and even half-filled some cells with honey. I felt most unkind having to remove the bits, but I had to segregate the bees in their new brood-chamber which was then covered with a piece of old stair carpet.

All these clumsy manipulations infuriated the bees and I was quite prepared to find them leaving the hive and taking up a more restful abode. They did nothing of the sort, however, and within the next few days were



H. Teale

(Above) The queen cells of the honey-bee are round, like small thimbles built onto the edge of the comb. (Opposite) Honey-bees "fanning" at the hive entrance to reduce its temperature during a hot spell. Note Mazinoff organ (extended from abdominal segment) on right-hand bee. This retains the scent of the flower on which the bee has been collecting and so enables fellow workers to recognize the smell on their next flight

busily bringing in nectar and pollen, the latter showing they were beginning to breed. No substantial amount of honey was collected that summer, for the bees were handicapped in having to draw out the combs from the foundation I supplied, while producing the necessary wax for cell-walls and cappings. A moot point is the amount of honey required to produce a pound of wax. Estimates vary from four to fifteen pounds, so these figures are not of any great help. The performance of wax production is not as romantic as suggested by Maeterlinck in his classic work on bees; the bees cluster in groups, the temperature rises and as the result of a digestive process tiny scales of wax appear on the ventral portion of their abdominal segments. These are removed with the help of a comblike attachment on their hind legs, passed up to the mouth of the bee and there kneaded and made fit for use. New wax is almost white in colour, so you can always tell where bees are working as the yellow cells in construction appear to have white collars.

My swarm must have weighed approximately three pounds; the bee-keeper's delight would weigh maybe six pounds, small ones of about two pounds are hardly worth taking and wintering, but may be used for uniting with a weaker colony. As there are in the region of five thousand bees to the pound, I started my career as a bee-keeper with some fifteen thousand bees. I took no honey away that season and would have liked to add a few more bees to my colony, but did not hear of any. Serious bee-keepers would not dream of doing such a thing for fear of disease, but I had little to lose so did not worry.

* * *

Bees are terrible fighters and a battle royal would ensue were you to unite the occupants of two different hives without special precautions. It is all a matter of scent, and if you give different lots of bees the same smell they will unite peacefully. One day my wife thought I had gone mad when I asked for a flour-sifter, but there was a good reason! I had taken two frames full of brood and covered with bees from a strong colony and meant to place them in the brood-chamber of a very weak colony which had only just managed to survive the winter. I sifted flour freely over both lots of bees, and they were so busy cleaning themselves that by the time they had done so the newcomers had taken on the hive smell and they all carried on perfectly in harmony.

By the autumn all but the two outside frames had been drawn out and had con-

tained at some time or other brood and food reserves. In September I made up a syrup out of pure sugar and water, poured some into a treacle tin whose lid had been pierced by tiny holes and inverted it over a little window I had cut into the stair carpet covering the frames. The syrup oozed out and was taken down and stored by the bees.

A stock of bees is said to consume thirty pounds of honey in the course of a winter, but as I had no idea how much my bees had, I cooked up an extra block of candy and placed it over the same window as the tin of syrup. You cannot feed syrup during the winter as bees are liable to get dysentery if they are not able to go for cleansing flights when necessary. You will find bees on the wing in winter only on warm still days, and on such occasions the bee-keeper is anxiously on the watch to see whether all his little charges have survived. I must say I was very relieved, when, after my thermometer had registered fourteen degrees of frost several nights running, I saw them flying the next fine morning. A few had succumbed and were being dragged out and dropped in front of the hive.

* * *

The small bee-keeper has a quiet time during the winter, as no serious inspection is necessary much before the end of April. The amateur, however, who is trying to enlarge his apiary never has enough time for the hundred and one jobs which crop up. Old hives must be repaired, scraped and painted, frames must be put together and sheets of foundation fixed. The spring inspection always catches me with my tasks half finished, and every year I make a vow not to be caught out again. But what are you to do, with life so short and so full of interesting jobs, of which bee-keeping is but one, albeit a very fascinating one?



H. Teale



Jordans

By Horace Shipp

Photographs by
G. Stanley Weddle

To those for whom freedom is not only a successful war-time slogan, but is that "Liberty to know, to utter, and to argue freely according to conscience" for which Milton pleaded, Jordans in Buckinghamshire has a special appeal. For here amid beech-shaded lanes is the Quaker Meeting House erected in 1688—one year after the Declaration of Indulgence made such a building possible. Here is Russell's Farm, where for more than thirty years before that date 'Friends' had gathered secretly to worship, risking fines and imprisonment. Here, in the great barn, the timbers of The Mayflower came to rest. Here, in the peace of the Burial Ground, are the graves of Penn himself and his wife Guli; of Isaac and Mary Pennington; and of Milton's friend Thomas Elwood; beside many other Quaker worthies.

Little wonder that Jordans has become a place of pilgrimage to thousands of visitors from the Old and the New World



Jordans occupies a couple of acres of land in agricultural surroundings—see the stook of fine wheat from a neighbouring field—in the south-east corner of Buckinghamshire only 25 miles from the centre of London. The main Hostel building incorporates William Russell's old farmhouse. The ancient kitchen, which is now the refectory, is a beautifully preserved piece of farmhouse interior architecture. Its great ingle-nook, its brick floor, its vast-beamed ceiling remain much as they would have been when Friends were holding their meetings here in secret in the 17th century. On one of the doors is a rough carving of a Mayflower, a relic from the famous ship which was part-owned by a man in the neighbourhood and broken up in 1624





Across the garden from Russell's Farm stands 'The Mayflower Barn', built in 1626 partly of timbers from The Mayflower. One of them still bears letters with the last vestige of the name, Mayflower, Harwich.

'The Meeting House' stands in a sheltered glade of beeches. It is a small, single-story building of red brick, with tiled roof, and white-shuttered windows. Inside we meet that simplicity always associated with the Quakers: panelled walls, and unvarnished wood benches, facing the raised benches where the elder members of the Meeting take their seats. In the rooms behind are many interesting relics and documents concerning Penn and the early Friends







Outside the door of the Meeting House a garden gives the atmosphere of a cottage. A pace across the path, through a white gate and we are in the Burial Ground. A little group of stones tells that here lie William Penn, his wife and children; Isaac and Mary Penington, and those others whose records form so great a part of the early struggles for religious liberty. The original memorial tablets were removed some time in the 18th century when Friends had a 'concern' whether this marking of graves—even the most noteworthy—was consistent with their doctrines of equality and humility. Happily for the stream of pilgrims from Pennsylvania and other parts of the world there was a wise concession to human curiosity about 1860, and the present stones, each with its simple inscription of name and date, were raised.

Penn was always a Buckinghamshire man, though he was born in London. In common with most 17th-century Friends he had already been in prison for his faith when he came to the nearby village of Chalfont and saw and loved beautiful Gulielma Springett, whom he married and who lies beside him here at Jordans.

*As spiritually courageous as Penn himself were Isaac and Mary Penington. A Quaker mystic living a generation before Penn, Isaac Penington bore the full brunt of the religious persecutions. The world today might profitably turn to his pamphlet, *The Fundamental Rights, Safety and Liberty of the People*. He was imprisoned six times, often for long periods. His estates and those of his wife were confiscated. Debtors took advantage of his virtual outlawry. Yet it was written of him: "I do not think I ever saw him cast down or dejected or ever heard him speak harshly of those who persecuted him, for he was of that temper to love enemies and do good to those that hated him". The Peningtons, like that splendid rebel of God, William Russell, at his Jordans farm, used their home as a meeting-place through all the years of the interdict*

The Big Inch

The Story of the World's Largest Pipe Line

by R. QUARENDON, Ph.D., B.Sc.

AFTER eleven months of concentrated hustle, American engineers have spanned the United States with the world's biggest oil pipeline. The turn of a tap now brings the 'black gold' of Texas to the refineries of New York and eases a supply situation which was fast becoming desperate. In normal times this achievement would have been hailed as one of the wonders of the world; in the swift rush of events it has passed almost unrecognized.

Officials refer to this great national artery as the War Emergency Pipeline. Oil men call it the Big Inch, because it is twice as big as any pipeline that has ever been built for long-distance oil transport; through it course half a million gallons a day of a modern army's life-blood. We should remember it not because of its size or even for what it does, but because it is a monument to what men

can do to overcome difficulties in a cause in which they believe.

Oil travels vast distances to reach the battle-fronts of the world, whether in the firing line or the industries at home. To move it to London, to Malta or to Archangel from Texas means a trip by tanker of 5000-6000 submarine-menaced miles; to reach Suez via the Cape it travels twice that distance. The loss of Burma and the East Indies doubled the burden on the U.S. tanker fleet.

In peace-time, deep-sea tankers carry 90 per cent of the Texan oil from Galveston on the south coast through the Gulf of Mexico and along the Atlantic seaboard to New York. Submarines took a toll of these vessels as well as of those on the high seas. Motorists felt a more severe pinch when many coastwise tankers were transferred to trans-ocean routes

to supply demands abroad. The available pipeline services could not hope to satisfy the thirsty eastern states; by a triumph of organization the railways stepped up the movements of oil for a short time to a peak figure of three and a half million gallons a day, but blizzards and frozen points interfered very much in the winter months.

Mr Ickes first warned President Roosevelt of the threatened petroleum shortage in July 1940. Two years passed before the builders of the Big Inch 'got cracking' in the field, two years of disappointment and setbacks, two years of persistent campaigning by Mr Ickes, first as Secretary of the Interior and later as Petroleum Coordinator for National Defence.

When he became Petroleum Coordinator in May, 1941,



IWSP

Mr Ickes lost no time in forming a committee of important men from eleven of the most important American oil companies, to find out if a big national pipeline were feasible and to study the question of its design, specification and cost. The committee did its work well; it even made an aerial survey of the proposed route to aid right-of-way negotiations and site-clearing, and ensure a quick get-away from the word 'go', and persuaded the petroleum industry to pay for the work. The survey was completed in four photographic hours. In September 1941 the stage was set for the first act in the great pipeline drama, but the curtain did not rise; circumstances beyond the control of the management caused the postponement of opening night for many months.

The ordinary American simply could not take in these stories of petrol shortage. In a country where he could buy 'gas' for his auto almost as cheaply as water, where he drove a 50-horse-power car without tax, and often owned two cars instead of one, he could not believe the prophets of woe; no doubt many people think the same way about coal in this country. The oil was there; the problem was to transport it to the people who wanted to use it.

Drastic rationing shook this complacency, and more than most things made Americans realize there was a war on. Pearl Harbour clinched the argument and accomplished what months of talk had failed to do. But although the country was now as convinced as official circles of the need for the new pipeline, the War Production Board could not spare the 340,000 tons of steel required for its construction. Beset with demands for materials for tanks, guns, shells and planes, it twice turned down the recommendation. Glass, wood, concrete, plastics and other non-critical materials came under consideration as an alternative to steel and were rejected.

At last the oil supply situation became so critical that it forced itself into an A1 priority in the Board's list of urgent war jobs. On June 20, the W.P.B. gave the order to go ahead; two days later the order for the first 550 miles of piping reached the manufacturers. In August the first weld had been made and the Big Inch had begun to roll. All the spadework and planning of the oil industry in the previous year proved of the utmost value in giving the project a flying start.

The W.P.B.'s priority certificate covered only enough steel for the first half of the pipeline, from Longview in Texas to Norris City in Illinois; from this half-way house the oil

reached the east coast by rail, river, lake and subsidiary pipeline until the O.K. for the second leg was given.

The supporters of a pipeline for supplying the oil deficiency did not have things all their own way; alternative schools of thought had their own pet schemes. A fleet of 150 new 10,000-ton tankers to replace those which had been lost or sent to other parts of the world would have maintained a shuttle service between Galveston and New York, and would have put three gallons a week into the car tanks of motorists in the Atlantic states. Others advocated rail tank wagons; 25,000 of them would have supplied the same amount, but their production was beyond even the powers of the United States with resources already strained to the utmost to provide the tools for which Mr Churchill asked.

The third possibility, the pipeline, needed less steel than rail wagons, less men to operate it, and could be built more quickly; above all, as Petroleum Coordinator Mr Ickes pointed out, you cannot sink a pipeline.

The oil starts its 1400-mile journey at Longview—deep in the heart of the Texas oilfields, in the fever-ridden area where Texas, Arkansas and Louisiana meet. The first well spouted only fourteen years ago, but Texas has other distinctions besides its oil and its singing cow hands; it is the largest state in the Union, grows more wool and cotton than any other—and a quarter of its people are illiterate. From Longview the Big Inch cuts clean across the middle of Arkansas, wonder state of the Union, so called because of the remarkable richness of its farmland and the beauty and variety of its forests with their 129 native species, including pines, oak, yellow poplar and walnut.

The line negotiates its first big natural barrier at Little Rock on the Arkansas River. La Petite Roche, as Sieur Bernard de la Harpe called it when he founded the trading post at the settlement of the Quapaw Indians in 1722, is famed for its beautiful concrete river bridges, its fair-grounds and buildings.

The line passes Newport in north-east Arkansas and then cuts off the southern tips of Missouri and Illinois, two states divided by the waters of the river Mississippi. Missouri, the last state to give up its slaves, vies with Texas in the number of mules it breeds. In contrast to the broad majestic stream of the Mississippi, the muddy and turbulent river Missouri thunders through gorges and over falls in some of America's grandest river scenery.

An unexpected disaster occurred at this point. At Cape Girardeau two days before

the New Year, the river rose in its wrath and swept away the 1500-foot string of pipe with stores and equipment. This accident delayed the completion of the first half of the pipeline by several weeks. To bury it three feet below the river-bed involved the first deep drilling for shot-holes ever done in a river. In the whole of its course, the Big Inch crosses 200 rivers and streams.

Still in the land of the Indians and the pioneer days of the covered wagon, the line sweeps on past Norris City and through the great corn belt and the fertile fields, orchards and vineyards of Illinois, Indiana and Ohio. The latter is rather a remarkable state; it

raises more wheat than any other, yet easily leads in the production of farm implements. On this part of the route the chief towns are Princeton, Bedford and Columbus in Indiana, and Dayton and Columbus in Ohio.

Another formidable obstacle now bars the way into Pennsylvania—the Appalachian Mountains. To help the oil over the upward slopes the pumping stations stand closer together, while on the downward slopes they are further apart than the average distance of about 55 miles. In Pennsylvania, home of iron and steel and second alone to New York in wealth, manufacturers and population, the oil reaches the country it has come to serve.



Photographs from War Emergency Pipelines Incorporated

Winter found the pipeliners hacking their way through the frozen ground towards the Appalachian Mountains. Here the line is preparing to cross Brandywine Creek in Chester County, Pennsylvania



A caterpillar tractor with a side boom, known to pipeliners as a 'boom cat', is carefully easing a section of the big pipe into position on the crest of a mountain in Pennsylvania. By making bends on the cold pipe contractors have helped to solve a long-standing engineering difficulty

This is the only one of the original thirteen states of the Union without a coast line. In the mountains the line rises and dips sometimes at an angle of 45 degrees. To bend the line through these large angles needed the attention of three tractors, one at each end of the string of pipe, and the third pulling in the middle. By making bends on the cold pipe, the contractors helped to settle a question which had long perplexed pipeline engineers.

At Phoenixville in Pennsylvania, the line forks into two 20-inch lines, one of which goes to the Bayonne-Bayway refineries of the New York area, while the other serves the centres at Marcus Hook, Philadelphia and

Baltimore. The final ceremonial weld was made at Phoenixville on July 19, 1943.

The technical side of laying a pipeline may sound a little dull, even if it is the biggest pipeline in the world—just a routine of digging a trench, joining a few lengths of pipe together, dropping the string into the trench and replacing the earth. But to the crews who did the job it was not quite as simple as all that. Though these seasoned pipeliners would not have admitted it for anything, they had their thrills, mixed with not a little hardship and an occasional spice of danger. They worked steadily on through the heat of summer and the frost of winter; they passed their nights in remote and untrodden places, per-



After the frost comes the thaw. Here a large caterpillar tractor is churning its way through the mud hauling a truck loaded with pipe onto the boggy right-of-way. There must always be plenty of pipe ahead awaiting the welders

haps on bleak and blizzard-swept hillsides; sometimes they had to deal with poisonous snakes. But they kept the job rolling till it was finished.

To save time seven contractors split the work between them; the job of getting the pipe across the big rivers was given to specialists on this side of pipe-laying. The firm entrusted with the manufacture of the pipe finished the 550 miles of the first leg in four months.

Lack of adequate equipment at first handicapped the contractors. It takes a big caterpillar tractor winch to handle with ease a string of pipe weighing several tons; old and lighter 'cats' had to be used in conditions

for which they were not intended. Some of them sank in the swampy morasses of Texas and Arkansas; trucks and tractors had to be re-designed, and cleaning and doping machines rebuilt. The difficulties were overcome and the work went on.

Occasional incidents added their headaches or humour to the proceedings. Dope carriers on one section staged an abortive strike because they wanted the pay and status of the hoisting engineers. Once or twice contractors' men were held up at pistol point on lonely sections by labour racketeers; the line itself was threatened by fanatics who appeared to object to oil lines on principle. In the right-of-way negotiations, one get-rich-



quick farmer demanded one-quarter cent per barrel of all oil passing through his land, a rate of payment which would have made him a millionaire in five months. Like all the others, he received the standard amount.

Careful organization to keep the various operations in step with each other helped to hasten the work. The railway carried the 40-foot lengths of pipes to distribution centres, whence big lorries took them to the scene of operations, and laid them beside the trench or along the route. The pipe had to be handled carefully, as a ton and a half of 24-inch pipe is apt to 'egg-shape' if it falls too hard.

Meanwhile the ditching machines were hard at work; vicious steel teeth ate into the ground to make the three-foot wide home for the pipe. Its depth varied from four feet to eight feet, according to the nature of the ground. On some sections of the line two machines were used to speed up the work; one cut the top half of the trench, and the other followed along to finish the bottom half. Here and there the trench men blasted their way through the solid rock, but in general it was a case of dig, dig, dig.

Before the welders could get to work, the inside of the pipe had to be prepared to fit it to receive the oil that later would flow through it. Human pipe-cleaners lay on low-wheeled trolleys to do their part of the work; besides removing dirt and rust, they had sometimes to dispute possession with rats, mice, snakes and other visitors loth to leave a comfortable new home.

On the skill of the welder depends much of the success of the modern oil pipeline; hard-bitten veterans with experience in Iraq, Venezuela and other parts of the world gathered to tackle the Big Inch. They made the sparks fly in a race against time that carried the line along at a rate which averaged six miles a day and in favourable conditions reached as much as eight miles a day. After a hundred welds each 6 feet long, the evening glow of the camp fire must have been a welcome relief from the glitter of the welding arc.

The big cats now picked up the string ready for the next operation. Pipe must not go bare and unprotected into the cold ground; it must first be bathed, anointed and clothed in a snug suit of asbestos felting. Visitors to the scene of operations found an even greater

fascination in the cleaning and wrapping machines than in the welding.

It is very difficult to give an adequate description of these ingenious pieces of mechanism without a lot of technical detail. One of the machines cleans and primes the pipe, the other gives it a coat of enamel and wraps it. In the first, several dozen brushes encircling the pipe, scrub it with great vigour and then prime it, while the operator, sitting above the pipe, drives his mechanical charwoman slowly along its length. When the primer is dry another machine follows; this one puts on the coat of enamel while a strip of felt unrolls and wraps itself round the pipe. Oil men consider the cost of this treatment more than justified because it increases the value of the pipe in the ground by one-third.

After the pipe has been wrapped its jacket must be tested for punctures, which, if allowed to pass, might lead to loss of oil and costly repairs in the future. The instrument used for this test, known to some people as a 'stool-pigeon' and to others as a 'snitcher' or a 'holiday detector', is an electrical box of tricks mounted on wheels and runs along the top of the pipe.

All that now remains to be done is to put the coated pipe to bed with a comfortable blanket of earth above it, but even this operation requires care and judgment. To persuade several tons of serpent-like tube two or three hundred feet long to go into what has suddenly become a very narrow trench is not too easy a task; the pipe seems to acquire a most obstinate will of its own.

And so the line pushed on mile after mile towards its goal. From pipe-stringing to final backfill, the whole gamut of pipe-laying operations required the attention of over thirty different classes of workmen, each with his own special job, and each an essential factor in the job of building the world's biggest pipeline,—stringers, rag men, swab men, graders, welders, winch truck drivers, oilers, daubers—not forgetting the night watchman himself. They made an army of 8000 men when work was in full swing.

You cannot have an outsize in pipe without auxiliary plant to match. The centrifugal pumps and 1500-H.P. motors were the biggest that had ever been used for this duty and were specially designed for the work. Each of the twenty-five pumping stations houses three of these pumps; they force the oil through the line at a pressure of 740 lb. per square inch. Each of the valves that control the oil-flow weighs $7\frac{1}{2}$ tons, and stands more than twice the height of the man who operates

Still surmounting hills and crossing rivers, the Big Inch is nearing the end of its long journey in the Appalachian Mountains





(Opposite) This towering waterspout is caused by the explosion of some 15 tons of dynamite, as a rocky ditch, in which the pipe will be laid and covered, is blasted through the river bed. Through the whole of its course the Big Inch crosses 200 rivers and streams. (Above) It crosses one of the last of these on its way to the Eastern seaboard, where tankers are waiting to carry the oil from refineries to the battlefields of Europe

it. By making the pipeline twice the usual size, the designers reduced the electricity bill by one-third and saved enough 'juice' to supply a large town.

Although pipelines in usual circumstances carry only 10 per cent of America's oil needs, they have grown very much in recent years, in particular those lines carrying refined oil. There are now some quarter of a million miles of feeder and trunk lines in use. It is a far cry from the leaky bamboo oleoduct used for Burmese oil and the first cast-iron line with its screwed joints laid at Tarr Farm in 1862. The oil traffic through the pipes is now ten times as much as the total traffic carried by all the motor trucks of the country. A highly organized pipeline system of the present day, with its terminals, switching stations, storage yards and telephones and telegraph, bears a strong resemblance to a

modern railroad system. The companies operating these lines employ 20,000 people and pay them £10 million a year in wages.

A company known as War Emergency Pipelines Incorporated runs the Big Inch as a common carrier on behalf of the Government. No one seems to know whether their \$95 million charge will become a white elephant once the emergency has passed, or whether the Government will sell it cheap to a pipeline company as a going concern. The oil shipping companies will have something to say on the latter score, for long-distance transport in bulk an oil line costs too much to compete with ocean vessels between coastal towns. At any rate, the Government does not seem unduly worried by the problem because it has authorized another line almost as big for refined oil and is now considering the installation of a third monster line.



Barbara Russell

The Structure of the Past

IV. The Rise and Decline of Crete and Mycenae (II)

by STANLEY CASSON

THE centre of gravity had finally shifted from Crete to Mycenae and Thebes by 1400 B.C. In Crete the great palaces were in a decline and there are indications that Crete itself may have been actually tributary to the mainland principalities. Thus had come about a complete reversal of fortune. Instead of the mainland sending tribute to Crete, as recorded in the ancient tale of Theseus and Ariadne, a tale that probably went back to as early a date as 1700 or 1600 B.C., Crete was now subject to her one-time colonists of the mainland. New stock had probably blended with the original Cretan families who had first gone there, and the new stock was a pioneer stock, tougher, less literate and more ambitious than the highly civilized, perhaps over-civilized Cretan. To some extent it is repeated in the history of Spain, whose American colonists reached the stage of declaring their independence from the mother state, while the power of the parent declined and was not compensated for by new colonial possessions and fresh initiative. It is partly repeated in the story of the Byzantine kingdom of Trebizond which flourished for long after the mother city had perished.

And so the second phase of Aegean civilization begins about 1450 B.C., which is known to historians as the 'Mycenaean'. It is sometimes also called the 'Homeric'. And that is not a misnomer, because Homer, who lived some five centuries after the final fall of the Mycenaean world, still faithfully records its existence and background.

(Opposite, top) Ancient Thebes stood on a small hill in a wide, flat plain and is now largely covered by the modern town. It has many springs of pure water; (bottom) the citadel of Tiryns rises abruptly from the plain of Argos. It was a compact fortress with a small settlement within its walls



The Mycenaean world, short-lived though it was, started out with all the advantages which a new enterprise can demand. Crete, it seems, had been thoroughly looted of its treasures and its wealth. The mighty tombs of Mycenaean kings, at Mycenae itself, and in many parts of the mainland from Orchomenus near Thebes to Midea near Nauplia, all alike testify to the immense prestige and wealth of the Mycenaean potentates. The tombs themselves are achievements of architectural genius totally different from anything in Crete—and for that matter anywhere else in the world. They are a Mycenaean invention, like many other architectural features.



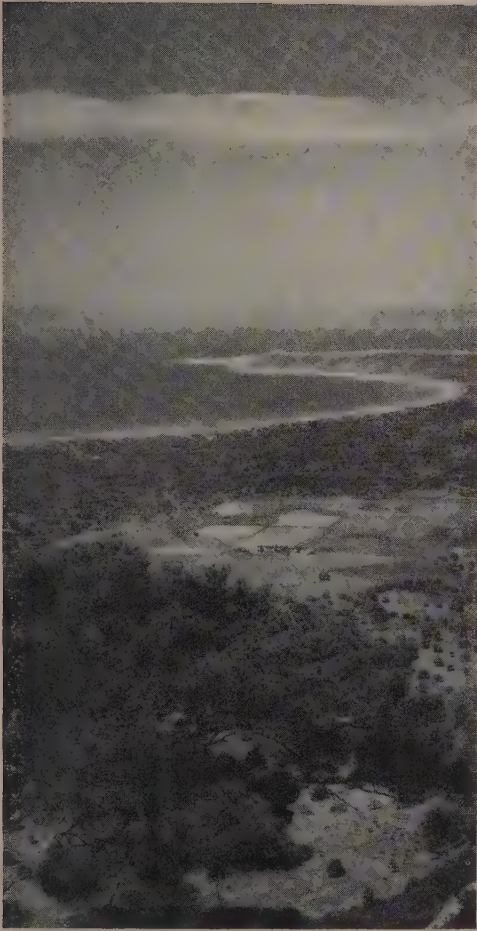
Stanford, London

Road systems, a great drainage scheme in the plains of Boeotia which greatly expanded the corn-growing capacity of that rich area, and a system of frontier fortresses, showed that the kings of this new world were far-seeing and deep-planning. They were realists who knew the world they lived in and its dangers. They even settled on some of the neighbouring islands and placed outlying forts there too. But in the finer arts and in the graces of literature and good living they seem to have lowered the standards of Crete.

Writing is known and used in the mainland cities to a fairly late date. Recent discoveries just before the war indicate that there was a literate class which was fairly widespread. But the arts of painting and carving had lost



Nancy Jenkins



their Cretan genius. Smaller works of art are less frequent and fashions were more rugged. A nation of a more heroic mould was rising. And it is at this point that the pages of Homer illustrate the chivalry of Mycenae, while the pages of Aeschylus record in drama the legends that belong to that most turbulent age. Agamemnon, Clytemnestra, Aegisthus and Orestes are famous figures known to both poets. Kings of mighty Thebes and Orchomenus range through their verses like gigantic figures of a fierce and uncertain world. And away in the North on the borders lurks a cloud that is dark and foreboding. A cloud that had not yet built itself up into a storm.

But the spirit of adventure was there and soon these restless barons looked for further horizons. And the same fates that shrouded the destiny of Crete hovered once more over the future of the Mycenaeans. Just as the Cretans had left the sanctuary of their island, so the Mycenaeans were lured to adventures that dissipated their power in a new world. This time it was not a neighbouring shore nor yet a land of rich cities nearby, it was the age-old lure of the East which drew them by stories of wealth and luxury. Seafaring had now greatly improved in technique, and the Mycenaean peoples sailed in their ships to the more distant islands that lay between the Aegean and Cyprus and the Asiatic coast. They settled at Rhodes and neighbouring islands and soon also took a hold of Cyprus. From there they stepped ashore on the Asiatic coastline fifty miles or so to the north of Cyprus, where the snow peaks of Taurus sparkle into sight of the onlooker who stands on the rich Cypriot plains on the north side

(Opposite, top) Entrance to the long passage way leading to the so-called 'Treasury of Atreus', a Royal tomb outside the city walls of Mycenae; (bottom) the Royal Grave Circle within which Schliemann found six Royal tombs containing an immense treasure of gold. (Above) The rich and fertile island of Rhodes was colonised by the Mycenaeans about 1300 B.C. and later by Dorian Greeks. (Right) Milking a cow in Cyprus



Nancy Jenkins

of that large island. And it is precisely in this region that we encounter the Mycenaean peoples, their armies and their generals recorded for us by a nation of equally warlike and organized men, the Hittites, who ruled almost all Asia Minor from the Black Sea coast to the Aegean and the Levant. The Hittites were in a stage of development almost similar to that which the Mycenaeans had reached. Both belonged to a Bronze Age, though the Hittites were experimenting on a large scale with the new metal, iron; the processes of its manufacture seem to have appeared first in North Asia Minor not far from the Hittite capital. The Hittites lived in walled cities, not unlike those of the Mycenaeans to look at, governed by princes who appear to have acknowledged a federation of principalities. The Mycenaeans came to their shores not in the least in the guise of conquerors, but rather as settlers prepared to offer their military experience and forces to their hosts. There were some clashes, but for the most part there was collaboration. Names almost identical with some of those of the Homeric adventures appear in Hittite records as leaders of the 'Ahiyava' a name identical with that of the Achaeans. But the bulk of Mycenaean enterprise seems to have consisted of trade expansion, colonization, isolated warlike adventures and a general thrust towards the coasts of Syria whither the untold wealth of the Orient lured them as it lured the classical Greeks after them, both

in the 6th century B.C. and also in the great age of Alexander of Macedon.

The Mycenaean colonists settled in Cyprus where they firmly implanted their mode of life, spread the use of their peculiar mode of writing, itself a Cretan inheritance, and developed trade and intercourse with Syria, Palestine and the Euphrates valley, areas already well known to Cypriots. Westwards, too, the Mycenaeans had adventures. Southern Italy and Sicily show proof of their infiltration in the shape of Mycenaean importations and works of art. Egypt itself appears to have received small groups of Achaean traders from the mainland as early as the 15th century B.C. Rhodes and all the islands of the Aegean are full of traces of Mycenaean enterprise.

And so the Mycenaean world repeated the story of Crete, but on a much larger scale. Where Cretans had merely settled on the mainland of Greece, Mycenae and Thebes dispersed their efforts to the four points of the compass. And there lies precisely the clue to their weakness. They had sent abroad, far afield, their most competent leaders and the bulk of their best fighters. The very siege of Troy is the record of one among many similar adventures. While they had entered the southern coasts of Asia Minor, in the Hittite sphere, merely as settlers and mercenaries on equal terms with the ruling race, they attacked Troy, which was at this time a small independent state, with a fully armed



Rischgitz Studios

expedition. And Troy can hardly be looked on as a successful siege. Sieges that last ten years waste resources and cannot count as victories even when the beleaguered city falls.

In brief the men of the Heroic Age, like heroes in all similar ages, were spending accumulated capital and spending it recklessly. King Priam complained bitterly of the waste of wealth involved in the long siege of Troy and looked back to the good old days of comfort and happiness. And the kings of Thebes and Mycenae could also detect a steady decline of standards of life and behaviour. That is the sequel to all wars and to all periods in which the hero, the fighting man, is held up as the type to which all men should approximate.

By 1200 or 1150 the whole organized life of the Mycenaean Bronze Age was depleted, weakened and unstable. The heroes of Homer no longer know how to write. Many of them are humble men who do their own farm-work and tend their own sheep. They are no longer the grandiose types who are represented by the enormous gold and silver treasures found in the Royal Tombs of Mycenae and other places in mainland Greece. There has been a steady decline of culture as a whole as well as of intelligence. By 1300-1200 B.C. we no longer find the exquisite works of art of the century before, no more of the traditions of Crete, handed down and faithfully followed.

The history of Mycenae itself can be studied

in great detail. Its walls are patched but never re-designed, and at last, soon after 1200 we see the tell-tale signs of universal fire and destruction. Even the lintels of the great Lion Gate are blackened by the furious flames that blew in a high wind on that last day when the greatness of the greatest Bronze Age city of Greece lay in ashes on a desolate ruin. Mycenae was burned, sacked and wrecked by barbarous invaders. You can see the signs today on the gateways and walls. And every other city and village also fell to the invaders. All over Greece the Mycenaean world is extinguished like a flame by one event. It may have covered a period of time. But in a few years the mighty world of the Mycenaeans and all their heroes had vanished as if it had never existed. Only in a few outlying places such as Cyprus did it linger on, or in Ithaca and the western islands. Substantially a mighty catastrophe had now occurred. Crete had been pushed out of the picture by the Mycenaean heroes. Now they were obliterated by other heroes more barbaric and more efficient than them. Who these barbarians were we do not know for certain because they brought no alternative culture with them. They came from the northern hills of Greece and Macedonia. They were mountaineers and they were ruthless. And they were also one of those varied new stocks which in a short while was to contribute to the growth of that mixture of genius known as the ancient Greeks. As

(Opposite) *The legend of the Wooden Horse, concealed in which the besieging Greeks penetrated into Troy, has fascinated the imagination of men from Homer's day to our own. This picture is by the famous Italian painter Tiepolo (d. 1770).*
(Right) *The well-known picture by Guérin (d. 1833) in the Louvre, shows Aeneas relating to Dido the misfortunes of Troy*







British Museum

(Opposite) *The great Lion Gate. This Mycenaean sculpture shows two heraldic animals supporting a sacred Minoan pillar. It is the oldest existing sculpture in Greece. (Above) This gold goblet of Minoan manufacture was found in a tomb at Vaphio, near Sparta. (Below) The coast of eastern Cyprus is sandy and flat. Mycenaean colonists settled here*

yet they were men of a Dark Age with no ideas beyond loot and destruction. They were later to be tamed by the kindly sun of the Mediterranean and lighted by the small spark of civilization which Crete had planted and which still glowed in out-of-the-way places. But Mycenae was gone. Its turbulent life was over for ever and a new age was dawning, even if the first glimmer of dawn was not to be apparent for several centuries to come.

With the newcomers, among whom the tribe of Dorians was pre-eminent, at least in our records, were some who had learned the arts of the iron-smith. In a short while forged iron replaced the feeble swords of bronze of the Mycenaeans. New and more effective weapons were used and signs of military knowledge among the invaders suggest that new arms had combined with new tactics to out-manoeuvre the chivalry of the Heroic Age. A grand old world had gone in smoke and flame and a new one was coming to birth in the pangs of a Dark Age, as dark and desperate and confused as any in history.

Nancy Jenkins



Life on an Ontario Bush Farm

by MARY BOSANQUET



CANADA is a continent, not a country. A man going to farm in Canada may settle anywhere. He may go to the rainy, temperate west coast, or he may take up a thousand acres or more of range-land in the interior of British Columbia, where 14 inches rainfall in a year is considered a lot. He may gamble on some wheatland in the prairies, where the soil is superb, but the climate sometimes catastrophic. If he prefers the east, he may take an old-established farm in southern Ontario, or if he is adventurous, take up a few hundred acres of bush land further north and hack himself out a life. The work on these farms is hard, but it is healthy, and one of the happiest years of my life was spent in the little community of Dayton, in the large wild district of Algoma.

Dayton consists of about a dozen farms, nestling together along a stony road, with the long beaches of Lake Huron lying only a mile to the south, and to the north the bush running up almost unbroken to the shores of Hudson's Bay.

Dayton, being about two thousand miles from the sea, has a continental climate, with extremes of heat and cold. For about five months of the year the land is frozen and mantled deep in snow. The roads are impassable, except with a team and sleigh, and Dayton lies all winter an island of warm little houses, in the dark sea of the frozen forest.

I think, for the children, the year begins with Christmas. Little spruce trees must be cut from the bush and hauled in to be decorated with silver and candles. Every house must be dressed from head to foot with branches of balsam and spruce and cedar, and on Christmas Eve there must be a special place made in every barn where Santa Claus can tie his reindeer.

But when Christmas is over, the working year of the farm begins. As soon as the lakes are frozen deep enough to carry a team, the men go out onto them and cut chunks of ice, which are hauled home and packed into the ice-house, to be used in the summer. When the ice is in, they go to the bush and cut all

the wood they will need in the coming year and through the next winter.

In the white months of the winter the women have a little time to call their own. When the work is done in the house, dinner finished and many hours still to come before supper-time, the farmer's wife and daughters may hitch one of the quieter horses to the cutter and drive over to a neighbour's to 'visit'.

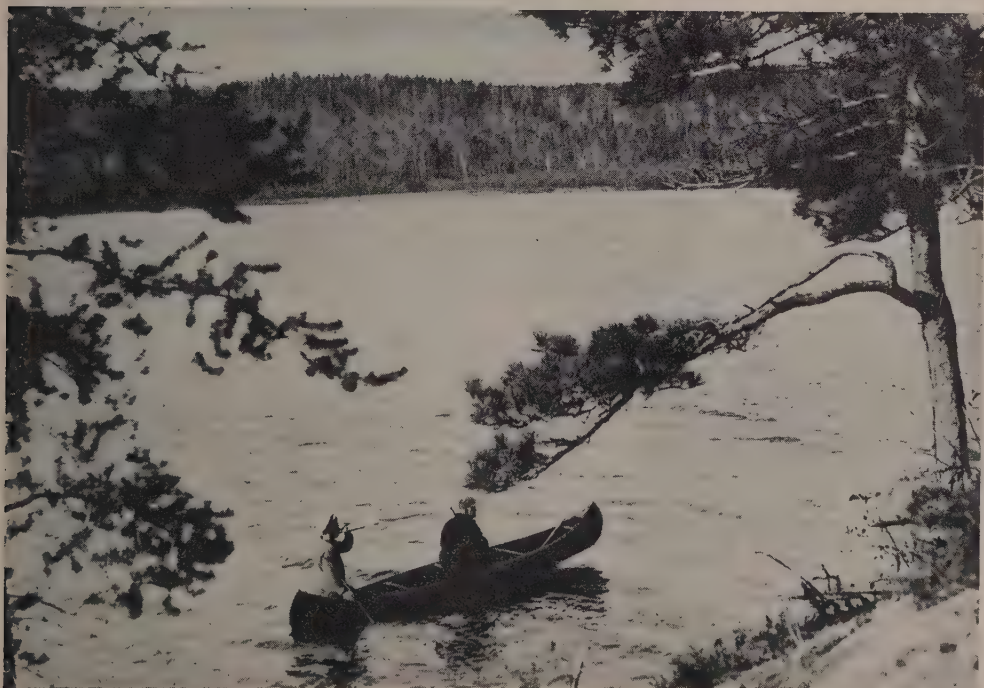
Visiting on the farms has its comfortable established pattern. The older women will settle down in the living-room to knit and gossip at length. The younger fry will go into a huddle of their own to laugh and look at photographs and to mull over and over the catalogue of clothes which may be bought by mail from Eaton's store in Toronto.

When the visit has run its leisurely course for an hour or two, the hostess will boil up the kettle, and after enjoying a cup of tea and some cookies, the family will set out again for home.

But visits are not the only form of activity with which the winter is enlivened. Early in the year there will be evening skating parties on the moonlit lakes, with a wood-fire burning on the shore and coffee and scalloped potatoes and baked beans keeping hot in a neighbouring farmhouse. When the lake is covered too thick in snow to be good for skating, there will be toboggan parties on the open hills, and sometimes there will be a 'hoedown' in the school-house.

Our hoedowns were hilarious affairs. When we had finished the chores, washed and dressed and had supper, we would pile onto the sleigh and start out. At each farm others would join us, till soon the sleigh was laden to capacity. We would arrive at the school-house to find the desks ranged along the walls.

(Opposite, top) For five months of the year the land is covered with snow, and during this time all the wood is cut which will be needed in the following twelve months; (bottom) a lake in Northern Ontario



By courtesy of the Canadian Government



A characteristic Canadian barn, with hipped roof. After the haying and harvest are over the livestock is settled in here, every chink in the walls is sealed, and all is ready for the winter ahead. On Christmas Eve the children make a special place in each barn where Santa Claus can tie his reindeer

At each end of the room hung a lantern. At one end, on the stove, water was boiling for tea later on. At the other end two fiddlers were tuning up, and the caller was shouting, "Take your partners for the first square!" Squares of four sets of partners would form all down the room, as though for an English country dance. The fiddlers would begin to play and the caller would start in a clear sing-song voice:

Take your partners
Corners address,
Join your hands,
Go way to the west . . .

And break the ring
And all swing
And promenade all . . .

All through the dance he calls the figures;

each dance has its own traditional calling verse.

At midnight we would sit down and drink tea and eat sandwiches, then we would dance again, till at about two o'clock, mindful of the milking, we would hitch up the horses and go bumping home. Next morning our little dance hall would be a school again.

The problem of school for the scattered children of the bush is a serious one. Every community in Ontario with twelve children or more is entitled to ask for an elementary school. This means that a large number of teachers are required, who can deal simultaneously with a variety of boys and girls from six years old to fourteen. Our teacher at Dayton was a little lady of twenty-one, and standing amongst the strapping farm boys, she looked like a child herself.



Harvesting is hard work, and for days on end the farmer's wife is also kept very busy feeding relays of hungry workers. Good solid dinners of roast beef, potatoes, corn on the cob and plenty of fresh milk appear and disappear in the kitchen

The problem of church services presents some of the same difficulties. It is very ably dealt with by the United Church of Canada, which sends its young ministers out to serve apprenticeship in the bush, where as 'Mission Pastors' they have five or six scattered parishes for whom they hold services. Our minister never missed a service all winter; sometimes he came on skis, sometimes on horseback, sometimes in a cutter. And it was not only to hold services he came. No skating party or social was thought quite complete without the minister.

So the months of the winter pass pleasantly by, and at last there begin to be signs of the break-up. "Crows are back!" the school-children will cry, and looking out we can see a few ragged black birds beating their way across the sky.

"Sap's running!" one farmer will say to another, and soon the refrain is taken up and passed from one to the other all through the community, "Sap's running!"

And then the first work of spring begins. Holes are bored in the maple trees, spigots set into them and cans hung underneath. Slowly at first, then quicker, the fine white sap begins to run out. Then a fire is lighted in the bush, a great pot hung from a tripod above it and the sap poured in, and more and more added all day as it runs out into the cans. By evening the black pot holds the first of the maple syrup, sticky and brown, smelling of sweetness and trees.

The opening of the syrup season is the signal for a new kind of amusement—the 'taffy pull'. The young people assemble at one of the farms. Some syrup is boiled and





After the haying (opposite, top) there is sometimes a short lull, when preparation is made for the most critical time of the year, the harvest. (Opposite, bottom) A crop is being cut with a horse-drawn mower and (above) a tractor and binder are being used. (Right) One of the younger members of the farmer's family, who is already learning to take part in the life of the fields and the barn. In many parts of Canada there are clubs and competitions for the children which stimulate their interest in work on the farms



boiled until it is as thick as treacle, then it is taken out and flung on the snow. As soon as it is cool enough they seize it and begin to pull it out. The idea is to keep on pulling it until it turns quite white, but long before that ideal state is reached, most of it has been eaten!

By the time the syrup boiling is over, the fields have begun to come out from under the snow, and now the farmer's short strenuous season begins. The land must be ploughed, harrowed and rolled and the seed put in as quickly as possible. As soon as the snow soaks into the ground and the sunshine grows warm, the hay crop begins to shoot up. Before we are half ready for it, it is ready for us, and we must get in and cut it.

There is not much time now to leave the farm, except on Saturday night, when the shops stay open till midnight in the small towns and the farm families come in from miles around to buy provisions and spare parts and binder twine, and to lean against the lamp-posts and talk about the crop prospects.

As the year goes on into early summer, the wild fruit crop begins to get ready. Wild fruit is very important to the economy of bush farms. Not much domestic fruit will ripen; strawberries, some hardy apples and a few rather wooden pears are about all. But out in the bush wild crops grow in generous profusion. In the lighter parts of the woods, wild strawberries grow thick as pebbles on a beach. Along the edges of the bush are tangles of wild raspberry canes, and out in the more open parts are little cherry trees. Along the fences grow bushes of a black clustering fruit called choke cherry, delicious for jelly. Right out on the barren rocks grow the blue-berries, hung on low bushes and covered with bloom like tiny purple grapes. All these fruits must be gathered and bottled for the long winter.

Picking the wild fruit is the work of the women and children. Unlike most city boys and girls, the farm children begin to make their working contribution to the life of home and community as soon as they are old enough to be active at all. The girls do jobs in the house and garden, the boys take part in the life of the fields and the barn. In many parts of Canada there are clubs and competitions for the children, which stimulate their interest in the work of the farms. The 'Swine Clubs', started originally by the Canadian National Railways, awoke the boys' interest to such an extent that they materially improved the raising of pigs throughout large areas of the

The main thing that the bush child has to learn, besides being a good housekeeper or a good farmer, is to be Jack of all trades. Up in the bush there is no one to do anything for you but yourself. The farmer must build his own house and his own barn and sleigh and hayrack. If his wife wants her rooms nicely painted and papered, she must be the one to do it. In the work for the community everyone will join. After a snowstorm, the farmers will get together with their teams and plough out the roads. If a new teacher is coming, the women will run over and 'fix up' the school-house.

While I was in Dayton, the young people made a 'bee' to paint the church, and a fine time we had, rocking about on the tops of ladders and splashing the paint around. We did it in the tiny pause which comes in some years after the haying. We had to hurry, for already the thrash machine was starting on its rounds, and the farmers were watching the grain with speculative eyes. For in this poised moment after the haying, we are preparing for the supreme battle of the year, the battle of the harvest. Time is the enemy, weather is the uncertain neutral. It may favour us with sunshine, or it may turn against us on the turn of the wind. When to cut the grain, how long to leave it in the shock, whether to haul it into the mow or thrash it straight out of the field—all these are grave strategic decisions that the farmer has to make.

When finally the tractor towing the ungainly thrash machine turns in at the gate it is the great day of the year. In the bush country the farmer does not hire a gang for the thrashing, the neighbours forgather to help him. If he is going to 'stook thrash' out of the field, they come driving their teams in the hayracks. If his grain is already stacked in the mow, they walk over, leaving the teams at home. Soon the great machine begins to throb, and the men get to work. Meanwhile the women are just as hard at it in the house, for they know that at noon a dozen or more hungry men will come clumping in, needing a large dinner and a good one. For days the farmer's wife will have to feed fifteen or twenty people, crushing them in relays, men first, women afterwards, into her scrubbed kitchen. She enjoys it, but still she breathes a sigh of relief when at last the grain is all

(Opposite) A veteran harvester. In normal times the farmer in the bush country does not hire a gang for the thrashing; neighbours help each other





The hayrack makes a comfortable seat when the time comes for a meal

safely in the bin and the straw stacked in the barn-yard.

Then at last the tension of the year relaxes. Now there are only the stubble fields to plough, and the fall wheat to put in. But before the winter comes down like a curtain, there is one more event: the Fall Fair.

The family collects the best of the farm produce, the strongest of the horses, the fattest of the stock, the best milkers among the cows, and packing them into trucks and trailers, carries them off to the fair grounds of a nearby town, there to be paraded and judged. Farmers will be there from all the nearby communities, with their own stock to show,



While their elder brothers are at the war the children lend a hand in driving the tractors

and their own tales of the year now nearly over, of the haying and the harvest. After three or four happy and expansive days the farmers will pile the stock on the trucks again and take them back to be fitted into the warm barn, which will be their home for the coming months. Then the family will seal up all the chinks through which the weather might come

in, make snug their own house and run their eye over the wood-pile.

For a few more weeks the fields will lie dark and uncovered under the autumn sky, and the last red leaves of the maple trees will go by on the wind, till one night, while we are asleep, the snow will come, and close up the many-coloured year with a white silence.



Old English Bridges

Notes and Photographs

by WILL F. TAYLOR

Many bridges built five or six hundred years ago still carry on the daily work for which they were originally constructed, though the traffic passing over them has grown to a weight undreamt of by their builders. White Mill Bridge, above on the left, dates from the Middle Ages and is still singularly perfect; it crosses the river Stour at Sturminster Marshall in Dorset. The picture below is of another bridge on the same river further upstream at Sturminster Newton; local farmers of that fertile district have crossed and recrossed it for 500 years. On the right is one of the most remarkable of ancient Sussex bridges, at Stopham; and below, King John's Bridge at Tewkesbury on the river Avon





The Devil's Bridge, opposite above, is over the river Lune at Kirkby Lonsdale in Westmorland, and was built during the latter half of the 14th century. A splendid example of medieval workmanship, it is held to be the most beautiful of its kind in Northern England. The picture below shows Newby Bridge, Lancashire. Its homely arches lead direct to the front door of the other prime need of the traveller, a good inn. The river Severn, on the right, has no medieval bridges, but an impressive picture is made by the more modern construction at Bridgnorth, with the old roofs of the town clustered round it below the castle and its steep cliff





At the furthest tip of Northumberland the three bridges seen above span the Tweed. The oldest, and nearest in the picture, is 300 years old and work on it was started by James I. Its predecessor was probably built of timber; when an English army was crossing in 1542 it proved too weak and "broke with the multitude of people". The Stuart arches have held up well, and it remains today the longest and one of the finest of England's old bridges. The second and newest bridge in the picture, of reinforced concrete, was opened in 1928 to carry the traffic of the Great North Road. Third and furthest away is the railway bridge built during the Victorian era



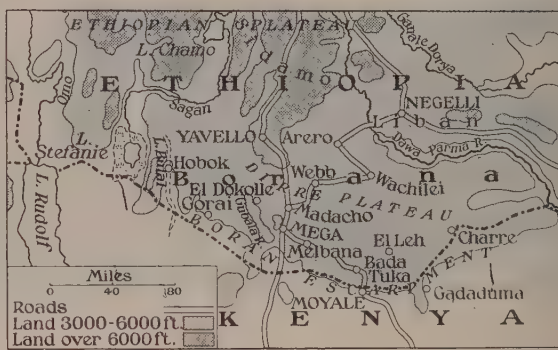
In northern Wiltshire below the terraced stone houses of Bradford on Avon, the 14th-century Chantry Bridge fits into a picture which is markedly in contrast to the landscapes of southern agricultural Wiltshire. The solid little building at the end of this bridge may have been added later, for use as the town lock-up in place of the original chapel. To quote Henderson and Coates in their monograph Cornish Bridges: "in very many cases bridges were adorned with Chapels or Calvaries, and some of these had well endowed chantries where Mass was said daily for the soul of the pious founder." They were built as works of piety; lords, ladies, bishops and abbots providing the money



Water in Borana

by R. O. HENNINGS

The Boran, who give their name to the southernmost province of Ethiopia, were not subdued by the Ethiopian Emperor until the late 19th century. After the defeat of the Italians in 1941 they were administered by British Political Officers, of whom the author was one, until the Emperor reassumed complete sovereignty early in 1942. Through all political changes the Boran have maintained their traditional way of life dependent on two essentials, Grass and Water



As you travel towards the northern frontier of Kenya, churning in your lorry along sandy tracks or walking in front of your baggage camels, you see rising ahead the sharp wall of the Boran Escarpment, marking the southern edge of Ethiopia. To the north-bound traveller the Escarpment is the first step upward from the desert plains of northern Kenya towards the highlands of Ethiopia. To the pastoral inhabitants of this region it means permanent water in the folds of the hills and grass on their summits, a country where the camel becomes of secondary importance and cattle and horses thrive. The tribesmen who live along the frontier declare

that if you wish to find out where the frontier line passes you cannot go far wrong if you leave all the best grass and water on the Ethiopian side, and the thorny lava-strewn plains to the south on the Kenya side.

This is the country of the Boran, who share with their kinsmen, the Gabbra, the region on both sides of the frontier from about Moyale in the east to the marshes of Stefanie, mis-called a lake, in the west. They are a branch of the Galla people, Hamites who long ago moved from their original home, believed to be in Asia, into the Horn of Africa where they are today. In type they are lightly built and brown-skinned, with thin lips and noses and

goat beards. Further north in Ethiopia the Galla are mostly agriculturalists today, and many profess the local form of Coptic Christianity. But the Boran tribe still follows the pastoral life, owning large herds of cattle, sheep and also horses, and they retain still their ancient pagan religion of sacred groves and serpents, with two hereditary patriarchs in control.

The limits of the territory occupied by the Boran are imposed not so much by geographical barriers as by the pressure of hostile tribes. In the east the Somali and their kinsmen the Gurreh still move forward as they have done for centuries past, adopting the tactics of infiltration and occupying gradually over a period of years more and more water-holes to the exclusion of the present occupants. In the west are the Shangalla, the unadministered Nilotic tribes inhabiting the delta and the banks of the Omo River north of Lake Rudolf. Their periodic raids have made the country around the marshes of Stefanie a no-man's-land into which the Boran seldom venture. In the north where the hills begin to rise towards the Ethiopian Plateau, the Jamjamtu and other highland tribes effectively keep the Boran to the plains. The only outlet is southward into Kenya, but the land is uninviting and the Kenya Government discourages any southward move, since apart from the political repercussions the scanty water supplies of the Northern Frontier District would be insufficient to provide for any large influx of people and stock.

So the bulk of the Boran stay where they

are, on the plains of Borana, some 4000 feet above sea level, covered in the east with scrub and innumerable red or white termite towers, and in the west by wide grass prairies. A glance at the map reveals immediately one significant geographical fact: in all the two hundred miles of Borana from the Dawa Parma River in the east to Stefanie in the west there is not one single permanent stream. Where then do the Boran get water for themselves and their stock? The answer is twofold: for part of the year they use the rain-pools and seasonal streams, and for the rest they depend upon the wells, which are the ultimate foundation of human and animal life in Borana.

The rain in this region comes twice a year, from March to May and in October and November. When the rain is heavy, the land revives and blossoms with the sudden profusion which is the peculiar joy of semi-desert lands. The yellow puff-balls of the acacia powder the thorn-bushes and carpet the ground, and their scent fills the breeze. The rocky hillsides are starred with the crimson blossoms of *Adenium*, the Desert Rose. As you pass the rain-pools which mirror the sky and the moving clouds, you see small terrapins ducking beneath the surface. You are likely to meet large tortoises ambling along the muddy tracks; if you are in a lorry, they crouch down in the middle of the road with head and feet withdrawn, and wait for you to pass over them. Schools of ostrich chicks, like long-legged ducklings, go trotting through the grass, chaperoned by ten-foot high mamma. The thickets are full of bird-song and butter-

(Opposite) Boran herds-
men waiting to water their
cattle at El Leh. (Below)
These Boran tribesmen
wear turbans adopted from
their Moslem neighbours



flies, and guinea-fowl in their thousands grow sleek and glossy.

At these times the Boran set out with their flocks and herds to make the most of the fresh grass and the rain-pools. The mats and hides which form the roof and sides of their huts are tied on the backs of the baggage oxen and on donkeys, with all the rest of the household furniture, and they move in whole families to wherever the grass and water are best. Man and beast are content, for the long strain of the dry months is over and the rain has come. There is milk for all and the cattle wax fat.

Perhaps it is because these seasons are so fleeting that they are filled with such an intensity of life and happiness. For the rain-

pools and the new grass are soon used up, and one by one as the water on the plains dwindles the herds are driven back to the neighbourhood of the permanent and semi-permanent wells where they must stay until the next rainy season.

These wells will repay closer inspection, not only because of their local importance but also because one type, the deep artificial wells of the Dirre plateau, is of unusual design, peculiar to Borana, and mysterious in origin.

In the mountains there are the springs, which are comparatively numerous and fed by the heavier rainfall on the hill-tops. Here in the hills the Ethiopian Governors, following their usual policy, established military garrisons, around which have grown up agricul-

In order that the cattle should not foul the water it is poured into special troughs. This is the women's task, and they are seen here, with their skirts tucked up, baling water from the main reservoir which is filled by a bucket chain



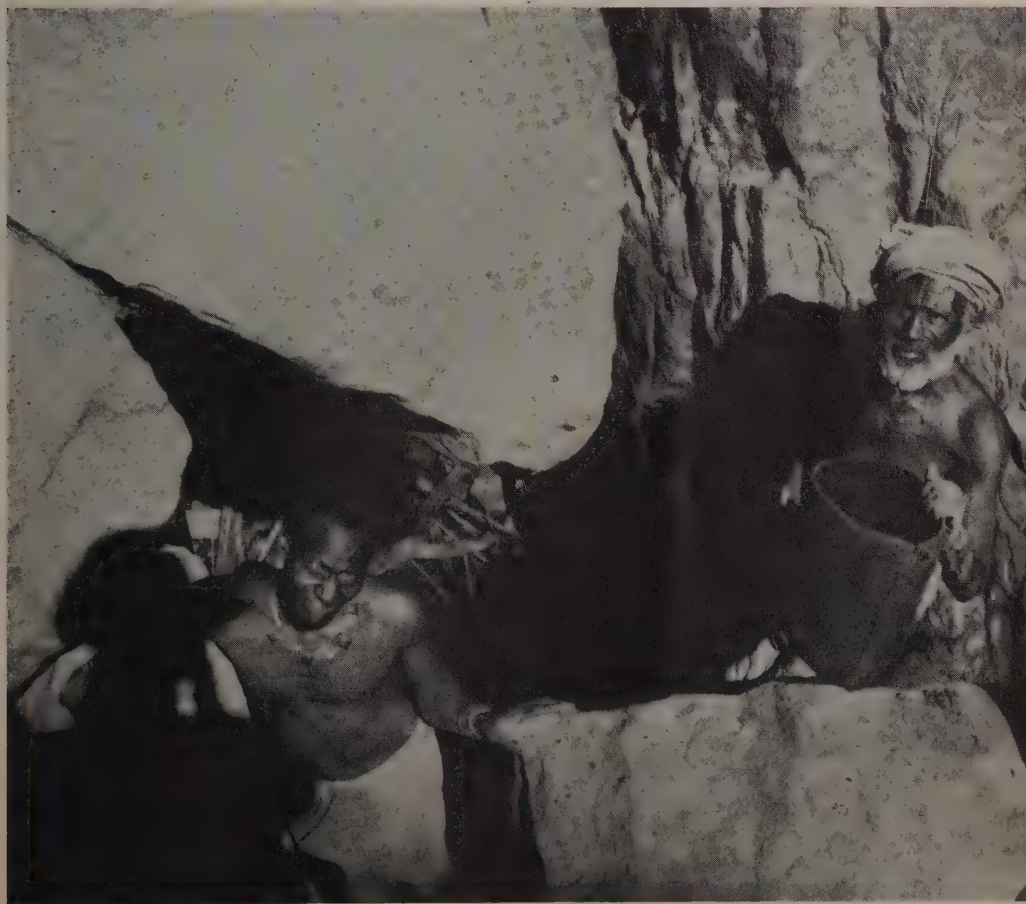
tural settlements of servile negroid tribes from further north, such as the Konso and Burji. The biggest settlements are at Mega, Moyale, Yavello and Arero, and there are others at Hidilola, Charre and Bada Tuka along the Escarpment. They are striking places, sometimes with a stockade occupied by the Ethiopian Governor and his soldiery. The houses are one-storey, square buildings with overhanging eaves supported on posts. The walls are of cedar logs and earth, and the low-pitched roofs are covered by a foot of earth from which sprout weeds and grain. Their general shaggy brown appearance is strongly reminiscent of the alpine villages of Switzerland.

The cedar forests on the surrounding hill-

sides have been felled to provide timber, and in the clearings the Konso and Burji agriculturalists have built their round thatched huts and ploughed their fields, using wooden ploughs drawn by oxen or mules. Some of the Boran have intermarried with these agricultural immigrants and settled down to their way of life, but the bulk of them prefer to live out on the plains, where their cattle do better than on the cold hill-tops. From there they bring their cattle to water at the springs and wells along the foothills.

Let us visit a watering-place of this type, El Dokolle at the foot of the Cubala ridge west of Mega. This ridge rises steeply above a wide bowl enclosed on three sides by hills. Through the thickets which cover the flat

The water from the deep, excavated wells is passed up in giraffe-hide buckets. The old Boran on the right, at the mouth of a well, is ready to empty his bucket into the reservoir from which the women fill the cattle troughs





Somali tribesmen loading water onto their camel at the wells of Gadaduma, east of Moyale

ground a dozen cattle tracks converge on a gulley leading up into the hillside. At any time from mid-morning onwards you can see three or four clouds of dust moving slowly above the bush as herds of cattle come to water from the Boran villages scattered over the adjoining plain.

As they approach the clamour of cow-bells and thirsty cattle lowing grows louder, mingled with whacking of sticks, shouts and whistles from the herdsman, and the quavering songs of the children. When they reach the mouth of the gulley, where the track climbs up to the wells, the herd is halted, bellowing thirsty impatience. The younger lads stay behind to check the cattle, while the men and women go up to the wells.

The water at El Dokolle is deep down in

natural clefts in the rock. There are six wells, and in the rainy season and for a few weeks after they will be full to overflowing. But in the dry months the water dwindles. It may rise towards the well-mouth during the night, but by evening when the last herd has been watered it will have sunk down the shaft again.

When water is deep underground the Boran bale it up to the surface for their cattle in buckets of giraffe-hide, forming a moving chain down the shaft of the well and passing the buckets from hand to hand. Thus a well is described by them as "Five men deep" or "Nine men deep" according to the number of men in the chain. The buckets are emptied into a reservoir scooped out at the top and thrown down to the bottom again. The



A view of the broken country at the foot of the Escarpment and the wells. Some of the huts in the foreground were occupied by the Italian native levies

reservoir is usually fenced round with stakes and brushwood to prevent the cattle fouling it, and from it the water is baled off into clay troughs from which the cattle drink.

Looking down into the darkness of the well-mouth, penetrated perhaps by a shaft of sunlight, you see the men standing one below the other and swinging up the buckets with regular and unceasing rhythm. Their arms and shoulders gleam with sweat and spilled water, and eyes and teeth shine momentarily in the gloom as each man looks up to the man above him. All the time they chant to the rhythm of their work, measured and melodious, the Boran Water Song.

Besides the water in the gulleys of the hills, there are many old volcanic craters in Borana holding pools in their bowls. Such is

Madacho, a few miles north of Mega, surrounded by blood-red cliffs through which precipitous earthquake fissures give access to the floor of the crater and its water-pools. Another such is Gorai, far out on the plains of western Borana, which contains water of primary value in an area otherwise almost waterless.

These wells in the gulleys and craters are mainly associated with the mountain masses of Borana. They are therefore less truly representative of this pastoral land than the wells of the plains, which are of two types: the wells in dry watercourses, and the deep artificial wells of the Dirre plateau. Typical of the former are the wells at Hobok on the Lak Bulal, a large deep watercourse on the western plains. Here the Italians kept a



(Above) Surrounded by the characteristic thorn bush of the border country, Boran, Somali, Gabbra and Gurreh tribesmen meet at Gadaduma. (Below) A pool at the bottom of the crater of El Sodd, near Mega, where valuable deposits of soda and mineral salts are found





The volcanic crater at Madacho, surrounded by blood-red cliffs, has water-pools in its bowl. Herds of cattle and horses wait their turn to descend the narrow path into the crater. In the background rises the highest peak of Mega Mountain

garrison of native troops, and it was at this small fort that the South African troops first struck when they invaded Ethiopia from the south in 1941. The wells of Hobok often have to be dug out anew after the flood water has passed away down the Lak Bulal, but even in the driest years they are reputed to be unfailing. Elsewhere there are many smaller water-holes of the same type, of varying reliability. At Gadaduma, for instance, on the border east of Moyale, is a group of shallow wells in a small watercourse leading down from the Escarpment. These wells provide the most generous water supply for miles around and are used by large numbers of tribesmen, Boran, Gabbra, Gurreh and Somali, including some from the Kenya side of the frontier.

The Dirre plain, stretching north from the Escarpment to the hills of Arero, is the heart of Borana. On and around it live the bulk of the Boran. There are few watercourses of any size across its undulating surface, but in


some places the prevailing red sand and thorn scrub gives way to extensive shallow grassy depressions where the soil is grey and chalky. Here grow big trees, giant thorns, wild figs and others. As you approach them you stare fascinated at their tall green tops towering above the surrounding bush, for you know that under those trees is shade for your tent and at their feet is permanent water deep underground.

Reaching Webb, some forty miles north of Mega, in the early afternoon, you may notice a few naked children playing on top of a high dusty mound. There are other such mounds here and there, and closer inspection reveals them to be great heaps of dry dung. Close to each is a long brushwood fence enclosing a patch of bush and trees where the grass and weeds grow longer because the cattle are shut out. If you walk over, the children will stop their games to stare at you, and the younger ones take fright and come scrambling down

(Top) Cattle waiting outside the fence which encloses the mouth of one of the wells at El Dokolle; (bottom) their turn has come and they drink from the troughs, the herdsman standing by to see that each has its share. (Opposite) The cattle go two abreast down the narrow passage leading to one of the wells at Webb







(Left) *A ray of sunlight slanting down the deep well-shaft at Webb strikes the glistening bodies of the men who chant the Boran Water Song as they swing the buckets up to the surface. (Opposite) The last link in the bucket chain*

the dung-heap in clouds of dust. Fifty yards away a herd is waiting. The cattle move restlessly, lowing and straining towards the thorn fence which runs just behind the dung-heap. The herd-boy, a strippling of twelve, half naked in a strip of calico, restrains them with difficulty, whacking the more restless beasts across the nose and whistling softly to soothe them.

Meanwhile, as you get nearer you hear the strains of muffled chanting. The singers are nowhere in sight. You are wondering where they can be when cattle begin emerging from a gate in the fence ahead. Ten or twenty head pass by, herded by a couple of bearded men wearing dirty white robes and turbans. As soon as they are clear of the gate, the waiting herd-boy stands aside, whistling encouragement while his thirsty cattle trot forward and jostle through the fence.

Inside the cattle pass along a passage just wide enough for two beasts to pass, flanked by banks of earth and piled brushwood. If you follow them you find that the floor of the passage begins to slope downwards almost immediately, and the banks at each side grow steadily higher as the cattle descend deeper into the earth. You realize now that the thorn fence which runs round the outside is intended to prevent cattle and children falling into the pit.

Some youths pass by carrying loads of dung to dump on the heap outside, for the passage would soon become blocked if it were not cleared regularly. The pathway curves a little, so that the gateway where you entered is no longer in sight, and you begin to wonder where it will end. The chanting which you heard before begins to swell louder, and at length after

you have come well over a hundred yards, the passage ends in a broader space some ten or fifteen yards wide walled in by rock on three sides. You are now at the bottom of a wide pit some fifty or sixty feet below ground level. The place is filled with cattle, drinking from the clay troughs ranged along the walls or awaiting their turn. At the base of the cliff on one side grows a wild fig tree, the sacred tree of the Boran, and at its foot gapes the dark mouth of the well-shaft, descending deeper still into the earth and echoing cavernously with the continuous chanting of the water-drawers.

Looking down into the shaft you can see the black water gleaming far below, and dimly discern half a dozen men balanced on footholds down the shaft swinging up the buckets from hand to hand. The top man tips the water into a pool formed between the roots of the fig tree, and women standing in the pool with skirts tucked up bale the water into the clay troughs where the cattle drink. From the lower branches of the tree dangles an unattractive assortment of old rags, odd bits of leather, balls of tobacco, cowrie shells and other oddments, offerings left on the sacred tree to ensure that the water in the well does not fail.

You can now appreciate the design and purpose of the wells. The cattle have been brought down an inclined passage dug through the earth into a pit some fifty or sixty feet below ground level. The underground water has to be baled up to the troughs along the sides of the pit, but by bringing the cattle down below ground level, instead of letting them wait at the surface, the hard work of baling has been reduced by half or more.

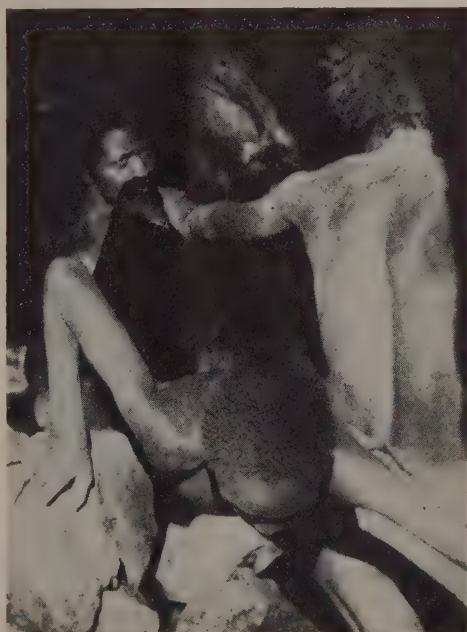
Wells of this peculiar design are found also at El Leh, Melbana, Wachilei and other places on the Dirre plateau, each with a dozen or more such wells grouped within half a mile's radius. It is clear that the excavation involved was considerable. Thousands of tons of earth and rock have been removed, a remarkable achievement for primitive people using only primitive tools. Inevitably the question is asked, who dug the Boran wells? But there can be no certain answer. It seems to be generally accepted that they were in existence before the Boran, who can show no comparable excavations in recent years, entered the country. It is said that the Somali tribes further east still use wells of similar type which they ascribe by tradition to the Madhanleh, a mythical race of giants now vanished from the earth.

Another theory is mentioned by Lord Cranworth who crossed Bořana on his journey to

Addis Ababa in 1910. In his *Kenya Chronicles* he writes: "The wells are obviously of great age, and it would be interesting to know who originally excavated them, since certainly the Boran would not have the skill and still less the energy. We were told in Addis Ababa that it was the Portuguese, but I think that it must be more than doubtful if they ever penetrated so far inland even in their great days."

The first European explorer to describe the Boran Wells seems to have been Donaldson Smith, who passed El Leh and Gof on his journey from Berbera to Lake Rudolf in 1895. In his *Through Unknown African Countries* he writes: "Although I saw no inscriptions or relics of any kind that might lead me to suppose that these wells had been made by the Egyptians, their immense size and the fact of their being cut through rock impressed me with the belief that they were dug by these ancient colonists".

Whoever dug these ancient wells, I prefer to think of them as the work of some early pastoral people whose name has been forgotten. Pastoral tribes in their wanderings make little or no impression on the face of Africa. They leave no buildings as memorials. They make no roads and clear no forests. Only their wells tell of their passage, and in these arid regions they could have no monument more permanent or more valuable to posterity.



Photographs by the Author

Secrets I Stole from the Lapwing

by B. MELVILLE NICHOLAS

LAST April I devoted some time to studying a pair of lapwings, and I was greatly impressed by the extraordinary cooperation between the two in rearing their young.

I succeeded in discovering the shallow depression, or scrape in the ground, in which they were interested, before they had lined it with grass, and I soon fixed up a 'hide', consisting mainly of gorse and bracken, from which I could keep almost continuous watch over them.

From previous observations of lapwings I had discovered that the hen birds are particular in their choice of nesting sites, and that there is usually some confusion before the situation is actually decided upon. This

was true of the pair of lapwings of which I write. Anxious to help his wife, however, the male bird did a great deal of fussing about, scratching here and there, suggesting first one place and then another, and often running about with a beakful of grass stems in his anxiety to set about home-making.

A number of situations were investigated by the fastidious hen bird, but eventually she returned to the original site, when her devoted partner at once set about getting together the few stalks and stems necessary to complete their home.

The site was very exposed and some considerable distance from hedges, trees or any similar cover, which was possibly by

A lapwing on the alert. Ground-nesting birds have many enemies, such as hedgehogs, stoats and weasels, all of which have a taste for eggs and also, later on, for young chicks

Photographs by the Author



design, for ground-nesting birds have many enemies. The hedgehog, for instance, regards their eggs as a delicacy, and stoats and weasels are also to be feared on account of their liking for eggs and, later on, young chicks. Nesting in the open fields and far from cover considerably lessens the risk of invasion by these little bandits of the hedge-

row. There is, however, a danger to be feared from the keen-eyed kestrel as he hovers on steady wings in mid-air, and also from rooks, carrion crows, jays and magpies, but these risks are greatly minimized by the protective coloration both of the eggs and the chicks.

It took the pair of lapwings six days to

Here the lapwing is seen by its nest. In the open field there is considerably less risk of invasion and theft from the ground, but constant watch must be kept for danger from the air





The complete clutch of four eggs, pear-shaped and arranged with the points inwards. If they are moved in the bird's absence she immediately puts them back into their original positions. The nest was built by both birds and took six days

complete their home, and although this consisted only of lining the depression with a few grass stems and weed stalks, the birds were very particular to do the work properly. Both birds assisted in the home-making; the hen was chiefly concerned with arranging the materials, most of which were collected within a few yards of the nesting site. The grasses were plucked by the male bird, and weed stalks were picked up from the ground. One or two twigs were brought to the nest but,

from my hide, I could not see where the bird had gathered them.

On the seventh day (as if in accordance with Scripture) the birds rested, every now and then taking leisurely flights over the heath. Several visits were made to the nest, and when I left my hide at 7.30 P.M. the hen bird was on her nest, with the male standing guard beside her.

Next morning the first egg had been laid, and on each of the three following mornings



The family of young lapwings, whose colouring of brown streaked with black and grey makes detection most difficult. On the fourth day they were left alone for short intervals, but family life continued for a fortnight

another was added, making the complete clutch of four. The eggs are pear-shaped, the points being arranged inwards when in the nest. If they are moved during the bird's absence she notices immediately she returns, and at once puts them into their original positions. The eggs, greenish-brown in colour, heavily blotched with browns and greys, blend perfectly with their surroundings.

When the hen left her nest she slipped off

the eggs quickly and ran several yards before taking to wing, but the male bird always took wing immediately he left the eggs. Both birds, however, resorted to various tactics in order to divert attention from their nest, none of which was more frequently indulged in than the broken-wing trick. On one occasion when my Alsatian dog followed me the male bird deliberately flew at him and then dropped to ground only a few feet ahead of the dog. As the dog

approached the bird just limped a few yards further on. This was repeated, the dog at times getting perilously near to the lapwing, until the far end of the heath had been reached. Then, much to the dog's amazement the lapwing, which had so cunningly feigned injury, flew away and returned to its sitting wife by another route. If an intruder, no matter whether man or beast, approached while the hen was sitting, the male bird would indulge in all sorts of aerial displays to attract the trespasser's attention.

During my observations of this pair of lapwings I discovered that the birds have a variety of call-notes. The well-known call of "pe-weet" is the most mournful of them all, and when heard in the dusk and darkness sounds pathetic and melancholy. Yet some of these calls are less of a wail than others, and I believe that with lapwings, as with most other birds, their different calls are expressive of inward feelings; some are cries of alarm or fear, as when the birds are disturbed at night, others merely of a 'conversational' nature, while the love-calls of spring, expressive of pleasure and happiness, are the most pleasant of all.

Lapwings walk, run and swim, and I have often seen them go down to a nearby stream to drink, enter the water and calmly swim to the other side. Although they are gregarious by nature and migrate in large flocks, they are very wary and shy birds. Each wedded pair demands privacy for its family affairs, and when another pair investigated a site not far from the nest which I was watching, the male bird in which I was interested promptly challenged the intruder to a duel. No quarrel actually took place, but things were made so uncomfortable for the interlopers that they soon decided to look for more convenient quarters.

On one occasion a cat disturbed the nesting lapwings, and I was amazed at the cooperation of the two birds in dealing with the poaching animal. The cock left the nest and flew straight at the cat, missing it only by inches, and his loud calls soon brought his wife to the scene when, together, they so effectively mobbed poor puss that she swiftly disappeared from the heath. I do not think I have ever seen a cat travel so quickly.

Both birds took turns at incubating, and on the afternoon of the twenty-seventh day I noticed a hole in one of the eggs. Next morning when I returned the male bird was brooding—it was always easy to distinguish him by his longer head crest—and I was not in my hide long before he put his head under his body and removed a piece of egg shell.

The cock continued to brood until well on into the afternoon, when the proud mother relieved him of his duties, and I caught a glimpse of two little fluffy youngsters. By the next afternoon the remaining two eggs had hatched.

For three days the young remained in their nursery except for short excursions into the surrounding heather. They were continually under the watchful eye of either father or mother, although it was the mother who was more often with them. From the very first the four youngsters, in their fluffy coats of brown down, streaked with black and grey, possessed the instinct common to most ground-nesting birds to squat motionless when alarmed. Their plumage excellently camouflaged them, and when sitting among the heather they were most difficult to detect.

The parents, although showing great courage in defence of their little ones, often acted indiscreetly in giving forth angry, shrill cries when an intruder appeared, thus betraying the whereabouts of their treasures. The lapwings' idea, of course, was to warn their fledglings, but to the experienced bird-lover it is a never-failing intimation that somewhere nearby are fluffy brown chicks.

On the fourth day of their lives the four young lapwings were left to themselves for several brief periods of about half an hour, both parents going further afield to forage for food. On their return to the heath they would alight some twenty yards away from the chicks, and stealthily run a zigzag course back to them.

Parents and family remained in the vicinity of the old home for about a fortnight, during which time the young had grown considerably and often went on hunting expeditions, looking for insects, worms, slugs and such-like among the undergrowth of their home territory. Then tragedy overtook the lapwing family, for late one afternoon a sparrowhawk, flying low over the heath, snatched up one of the chicks. The parents rose into the air loudly screaming, to attack the murderer, but soon gave up the chase. Returning to the heath I heard the male bird call with a low whistle, and saw the three youngsters emerge from their hiding-place to join their parents. For a few minutes the mother attempted to cover the chicks with her wings, though they had grown too much to be brooded now,—but it was an impressive moment.

Eventually I saw the family wending their way through the heather, being led by the male bird, apparently bound for safer quarters.

Some Portuguese Castles

by ALVES DE AZEVEDO

PORTUGAL's castles reflect the chief pre-occupation of the lusitanic race in the past: to expel the Moors. We, of Portugal, were the first in the Peninsula to chase them from our country—and to guard our coasts from the attacks of Barbary pirates and Northern corsairs provoked by the Portuguese conquest of Morocco. This accounts for the fact that our castles differ from those of France and England. For the feature that distinguishes Portuguese castles is that, being built for defence alone, they are architecturally of extreme simplicity and solidity. (Many 16th-century manor-houses were of just such a sober design.) But on the ancient granite of which they are built are engraved the most significant pages of Portugal's history and their lofty walls are the symbol of those medieval days in which strength was the only law. They stood through the ages, silent witnesses of great events and epic bravery.

Built, always, at strategic points, historians say these castles were the residences of governors, places for the safe-keeping of treasure and church ornaments, and that religious services were also held in them. In addition they were a sure retreat in time of war, when they were filled by peasants obliged to exchange the plough for the rough arms of the time.

Though in the Peninsula medieval feudalism was less firmly established than in other European countries, rarely was a place of importance without its fortress: centre of military power without which national unity would have been impossible.

Many of these glorious outposts of Portugal's expansion overseas are yet standing, especially those which in more recent times continued to fulfil their military or political function; others, however, abandoned by their garrison, which was their strength and their life, without bowmen to defend them or lord to keep them, slowly fell into such decay that today they can hardly be called ruins.

After the boundaries of Portugal were settled in the reign of Afonso III, more or less as they are now, the castles no longer held a place in Portuguese political life. From then on the men-of-war, in which Portuguese discoverers sailed the seas, took the place of fortresses.

It would be impossible in a short article to mention all the Portuguese castles which con-

tributed to the establishment of the nation or in which political events took place. I will refer only to those with particular significance and those which are sufficiently interesting to deserve special mention.

* * *

At Guimarães Castle the first king of Portugal, Afonso Henriques, was born in 1109. His parents, Count Henrique of Burgundy and Theresa, the daughter of the King of Castile (Afonso IV), lived in this castle, which, several times besieged, was never taken by the enemy. Its garrison, encouraged by the presence of the future King, fought with a bravery seldom, if ever, exceeded.

Only very exceptionally were Portuguese castles the strongholds of nobles, since their use was eminently national. Thus the castle of Guimarães is an excellent example of the medieval fortress planned for defensive purposes. It is said to have been founded by a Countess Mumadona in the 10th century, and was rebuilt by Count Henrique. This castle is linked with a dramatic episode of a kind that Sir Walter Scott loved to describe. Egas Moniz, Afonso Henriques' tutor and a brave warrior, had promised Afonso VII of Leon that his pupil would surrender to him the castle of Guimarães. As Afonso Hen-



Stanford, London



riques did not agree, Egas Moniz took his wife and children and presented himself, with a rope round his neck, in sackcloth and with bare feet, before the King of Leon to pay with his life and the lives of his family for his broken promise. The King of Leon, seeing the nobility of this gesture, forgave the brave warrior and sent him home in peace.

The castle of Guimarães, now entirely restored, is a jewel in the artistic heritage of Portugal. Its seven four-sided towers crowned with battlements, its sculptured stones, its windows—all have been justly celebrated. It was the seat of Count Henrique, Governor of the Portucalense county (a province of the Kingdom of Leon which was originally called *Portus-Cale*) from which Portugal sprang.

* * *

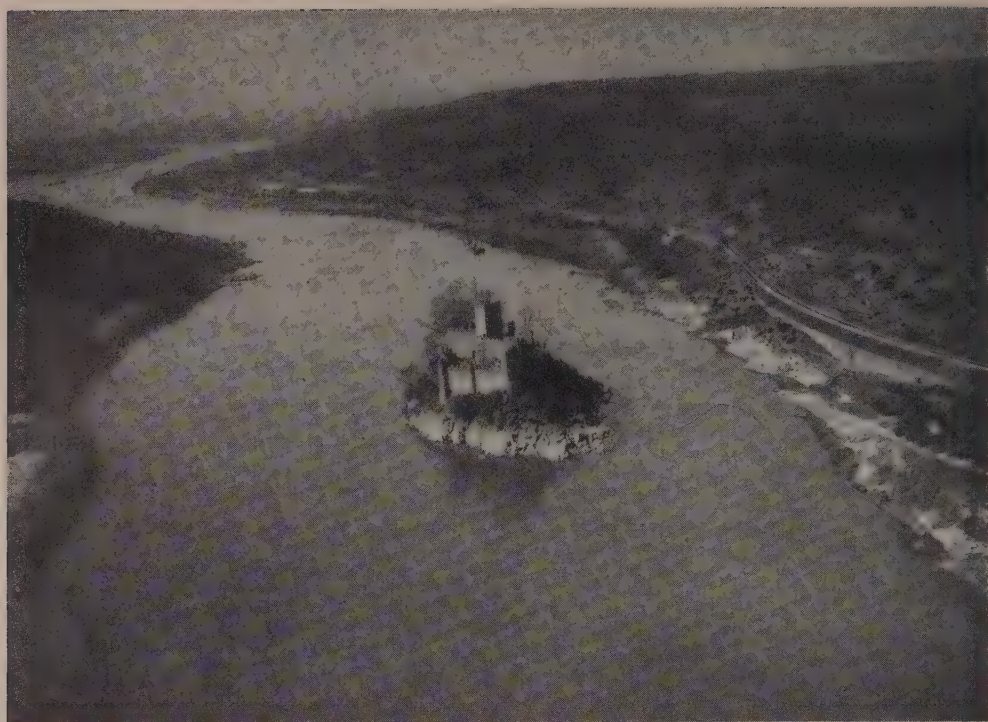
But Castelo da Feira was really the headquarters of the embryo kingdom, for according to the chronicles and records of the lineage of Don Pedro, "Afonso Henriques

stole two castles from his mother, one was Neiva, and the other Feira in the country of Santa Maria. With them he fought his stepfather." It must be made clear that Afonso Henriques did this in order to take out of his mother's hands the government of the County Portucalense; for she had contracted a second marriage with Fernando Perez de Trava, a Galician nobleman. Later on Afonso Henriques had to fight Afonso VII of Leon who came to the help of Trava. This war marked the birth of the nation. As Afonso Henriques did not pay homage to the King of Leon, suzerain of the Portuguese country, the independent Kingdom of Portugal was created.

The castle of Feira is considered by archaeologists one of the oldest and most representative monuments in the country. Its architecture, in which cuneiform loopholes may be seen, is evidently Gothic and earlier than the 10th century. It is one of our best preserved



The castle of Feira (opposite, top) is believed to date from before the 10th century; like the castles of Obidos (below, left) and Penedono (below, right) it is being preserved and re-constructed. (Above) The castle of Bragança. It was founded by Sancho I, King of Portugal (1185-1211), a great campaigner against the Moors, who later in his reign earned the title of 'Builder of Cities'. In Guimarães (above, right) Afonso Henriques, first king of Portugal, was born in 1109. Looking down on the little town of Leiria (right) through the arches of Leiria castle—one of the most beautiful of 12th-century buildings



The castle of Almourol is famous for the impressive simplicity of its lines, and also for its position—on a rocky islet in the middle of the river Tagus

castles. The work of reconstructing one of the towers which threatened to fall is nearly finished.

* * *

From north to south, Portugal has a great number of castles remarkable from the architectural point of view, as for instance, the castle of Bragança, founded by Sancho I, of which the English traveller John Latouche said in his book *Travels in Portugal* that it is the most perfect Portuguese fortress with the exception of the castle of Feira. The work of rebuilding the castle is now far advanced. The castle of Montalegre, founded by Afonso IV, is now being restored and rebuilt, as also are many others, some of which are shown in the illustrations.

* * *

Particular mention must be made here of the castle of Trancoso, which is linked with the history of England by two interesting facts. In July, 1387, King João I of Portugal married Philippa, daughter of the Duke of Lancaster. The latter came to Portugal with

a brilliant following of knights and men-at-arms to fight as pretender to the Castilian crown. The war lasted some time, during which English and Portuguese fought bravely, though there was never a decisive battle. It was in the castle of Trancoso that the King of Portugal, his wife Philippa, the Duke of Lancaster and the envoys from Castella gathered together to settle conditions of peace.

The castle of Trancoso was also the home, during childhood, under the supervision of the First Lady of the Bedchamber of the Queen, of the illegitimate daughter of King João I, the Infanta Beatriz who married first the Earl of Arundel in England, and secondly, after his death, Lord Talbot.

* * *

The castle of Penedono also has connections with England: the famous 'Magriço' Álvaro Gonçalves Coutinho, one of the 'Twelve Knights of England' celebrated by the Portuguese poet Camões in his epic poem the *Lusiadas*, was born there. Invited by the



Photographs from the Author

The Castle of the Moors in Sintra. From its walls high on a hill a magnificent panorama spreads out; within them the ruins of a mosque can still be seen

Duke of Lancaster, to whom Portuguese bravery was well known, twelve knights from Portugal went to England on May 23, 1396, to take part in a tournament to avenge some ladies of the English court who had been offended by their countrymen.

Also worthy of notice because of their historic and artistic interest are the castles of Montemor-o-Velho, a medieval fortress which has primitive walls running from the hill down to the river; the castle of Leiria, one of the most famous 12th-century castles of Portugal, rebuilt by Afonso Henriques after the conquest, for defence against Moorish attacks. The castle existed in the time of the Arabs and perhaps even before, if we are to believe Pliny, who named it Laeria or Lubella Golla Flamina. After having been rebuilt by Afonso Henriques the castle was carefully reconstructed by Diniz, the poet-King who also made it his residence. The medieval castle of Obidos is of interest to England too. Near its walls, on August 15, 1808, took place the first encounter, afterwards known as the battle of Roliça, between the Anglo-Portuguese

army and the troops of Marshal Junot.

Obidos was enlarged during the reigns of Afonso Henriques and Diniz.

* * *

But undoubtedly the castle of Almourol is the most beautiful and impressive of all, situated on the top of a rocky islet in the middle of the river Tagus. It was Gualdim Pais, Master of the Knights-Templars, who built this remarkable stronghold, one of the most powerful of that time. Of the same type, and also belonging to the Templars, are the castles of Thomar, Pombal and Idanha, but not one can compare with Almourol. As to the Castle of the Moors in Sintra, it is unique.

* * *

These old castles have a special significance for Portugal. Together they stood, in the troubled Middle Ages, a bastion against the country's enemies, and today they still stand—living witnesses of the events which led to the creation and establishment of the nation.

Famine in Bengal

by SETH DRUCQUER

Much has been, and no doubt will be, written in the heated atmosphere of political controversy about the recent famine in Bengal. Both inside and outside India—especially by the enemies of the United Nations—it has been used as a stick with which to beat the British and as evidence of our misrule. On the other hand, certain aspects of the famine may be held to afford evidence of the degree to which India is self-governing under the present constitution; and of the Government of India's reluctance to use its emergency powers except for immediate war purposes. As the Secretary of State for India said in a public speech in January, the whole subject of agriculture and food is within the constitutional responsibility of the governments of the various Provinces and States; and when, towards the end of 1942, the central and provincial governments were discussing cooperation to avert a foreseen famine over the greater part of western, central and southern India, the Government of Bengal played no part but declared that Bengal could look after itself. The allocation of political blame may well, however, be left to a cooler future, as it is left by the author of the present article. He draws our attention to other, conjointly more important causes of the famine, which are little known to anyone not possessing his immediate acquaintance with the country and are therefore the proper study of a geographical magazine

FAMINES in India on a scale affecting large areas of the sub-continent and large sections of the population are rare; the country is so vast, the extremes of climate so great and the crops so varying that if one particular area is affected, it seldom happens that all its neighbours are. It is, in addition, usually accounted one of the blessings of British rule that the terrors of such visitations have been reduced to a minimum, for unity of administration has resulted in greater co-ordination of relief measures and the ability to rush assistance from areas not affected by the famine to those that are.

Bengal, on the whole, has been freer from famine than most other parts of the sub-continent. The famine of 1770 lingered long in the memory of man, as did that of 1873; but in 1873, it should be remembered, the Province of Bengal included the present Province of Bihar within its boundaries and Bihar was the principal sufferer, while in 1770 only the districts of the North and West of the Province of Bengal were affected.

Famine, when it occurs in Bengal, is normally confined to the Districts of the western half of the Province, where many of the rivers are dying and the amount of water they can provide to irrigate the land is uncertain. Famine in East Bengal is almost unknown, owing to the astonishing fertility of the soil caused by the silt carried down from the hills by the Meghna and Brahmaputra rivers; where distress is occasioned, it

is more often than not by flood, when the rivers overflow their banks, rather than by drought; and even when two or three Districts experience the effects of floods, it seldom happens that the whole of the deltaic area is affected. Floods occur in one District or other of the Province almost every year; local relief works are necessary for a few months to tide sections of the population over until the next harvest season, but famine and distress covering the whole face of the Province is a phenomenon unknown in modern times.

The derivation of the Bengali word for famine is interesting. It is *durviksha* and it means literally 'difficult to beg'—which is exactly what happens in a time of scarcity. In fact, according to the Famine Code, one of the first danger signals of famine is unusual movements of the beggar population who always abound in any district of India. If they migrate in large numbers from one district to another, that is almost certain indication that they are feeling the pinch in the one they are deserting.

After the beggars, the section of the population most quickly affected is the cultivators without land. In India there is a very sharp distinction, economic and social, between the cultivator who possesses land and he who does not. The former, even in lean years, usually has something to fall back upon for his support, even if it means pawning his wife's gold ornaments and exhausting any

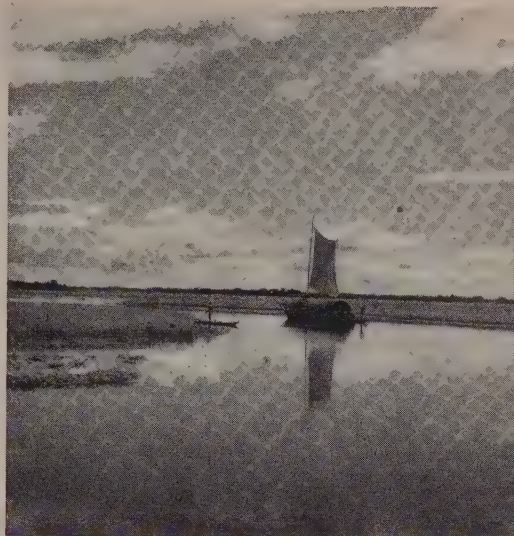


Stanford, London

reserves of grain he possesses. The latter does not have any such form of security. He never lives far above the starvation line, earns his scanty livelihood by such chores as ploughing, harvesting or petty earth-works on the land and, in a bad year, when the crops fail to mature and the landed farmer has no cash to employ labourers, his lot is sorry indeed. He has no reserves or resources to rely on and rapidly falls into the class of beggars depending on public relief for subsistence.

Causes of famines in the past have been clear-cut—cyclones, floods or droughts—and methods of dealing with them have been equally clear-cut—movements of food grains from one area to another and relief works within the area affected. Neither cause nor effect, however, has run true to type in the Bengal famine of 1943.

First, cause. There had been no noticeable floods or droughts in the preceding two years to warrant famine on such a widespread scale. It is true that the 1942 harvest was a poor one, but not exceptionally poor. Bengal has seen many worse harvests and not known scarcity. It is also true that cyclone and tidal waves played their part; in May 1941 a devastating cyclone swept over the District of Backargunge in the deltaic area, popularly known as the 'granary of Bengal'. The District had, however, by the time of the 1942 harvests, partially recovered from the effects of the devastation. Of more immediate



Famine in East Bengal is almost unknown, owing to the astonishing fertility of the soil which is due to silt carried down from the hills by the Meghna and Brahmaputra rivers. (Top) River scene with the rice-crop ripening in the middle of the rains. (Bottom) Results of a cyclone. This photograph was taken in a Midnapore village many months after the cyclone of October 1942

ill-omen was the cyclone and tidal wave that inundated parts of the District of Midnapore and the coastal areas of 24 Parganas (the name comes from the number of fiscal divisions or *parganas*) in October 1942. This is another rice-growing area, with a large exportable surplus. Its inhabitants, in many areas, were reduced to starvation level and, from being a 'surplus' area, it became a 'deficit' one.

These two cyclones of themselves would not have been sufficient to cause a famine. The famine was caused by an accumulation of circumstances hitherto unknown to Bengal. On the long-term view, there has been a steady impoverishment of the soil of the countryside, extending over a large number of years, the effects of which are only now beginning to be felt. Despite the amazing fertility of the soil, the crop yield per acre for every major crop, including both wheat and rice, is far lower in India than in other countries, notably Japan and America, producing the same crops; on top of this, crop

yields per acre in many parts of Bengal have been showing a progressive deterioration over a period of years which is not fully accounted for by a marked improvement shown in agricultural statistics. Until a better system of manuring the soil is introduced all over the Province and the peasant is persuaded of its advantages, this tendency is bound to increase. The 1943 scarcity is, therefore, in part to be attributed to continuous malnutrition of the soil.

More immediate causes, however, were more potent. The loss of Burma meant an enormous upset to the Province's internal economy. It has been suggested that rice exports from Burma to India were not large in view of India's total consumption. This is true, but it must be remembered that Burma rice is of a relatively poor quality and considerably cheaper in price than the superior qualities grown in Bengal. Bengal, in fact, used to export a fair percentage of her own production to other parts of India and abroad, consuming herself the rice imported from



Small boats included in the 'denial' orders at a collecting centre



Compensation for 'Denied' boats is paid cash down: East Bengal villagers receiving their compensation. Not strong physically, when scarcity and disease arrived these people had not much power of resistance

Burma through the port of Chittagong. Burma rice constituted the staple diet of the large numbers of landless labourers throughout the eastern half of the Province.

The loss of Burma was followed by a threat of invasion of India through Eastern Bengal. The authorities had by then realized that part of the Japanese success in Malaya and Burma was due to the use they made of local transport, particularly country river-craft; they therefore determined that there should be no repetition of such tactics in Bengal. This led to the much-criticized 'denial policy' of Government. Briefly, it involved the withdrawal of all but the smallest river-craft in the 'denial' areas beyond a line considered out of the reach of the Japanese. It is unnecessary to enter here into details about the manner in which denial was executed; suffice it to say that compensation was paid on a generous scale, cash down, to boat-owners who chose to surrender their boats rather than ply them in 'safe' areas; crews thrown out of employment were also com-

pensated. Boats were allowed to return to the denial areas for limited periods at a stretch, to assist the villagers in harvesting or fishing operations; and, taken all round, as much as was humanly possible was done to make the restrictions as little burdensome as circumstances permitted. Immediately, however, an immense dislocation of the economic life of the Eastern Districts was occasioned. Railways in East Bengal are few and far between, roads almost non-existent; over large tracts river traffic is the only means of transport, both for passengers and goods. The withdrawal of boats meant that rice and other products of the soil could not be transported to markets and other distributing centres; similarly, the flourishing fishing industry was brought almost to a standstill. Although denial orders were eased or totally withdrawn as soon as circumstances warranted, the result was that normal trade in the second half of 1942 was completely disorganized.

Boats, however, were not the only articles

Roads in Bengal are almost non-existent: such a fair-weather mud-track as this is the average type in rural areas



Over large tracts of East Bengal river traffic is the only means of transport, both for passengers and goods. This boat is carrying bags of rice from a neighbouring market to a riverside village



to be 'denied'. The south-eastern districts of the Province, notably Khulna and Backargunge, were also in the front-line of invasion, and it was essential that the enemy should not have access to the vast quantities of rice accumulated there. In consequence, reserve stocks of rice in these areas were withdrawn and denied to the enemy.

It was only natural, then, that the internal economy of the Province should be upset when Districts normally surplus become no longer so. The position was further complicated by the absence of all normal means of transport. Small boats had been withdrawn, many of the bigger steamers had been requisitioned for military purposes, while the railways, which were never more than single-track, had twenty times more traffic than they were meant to carry. Troop movements and movements of war materials naturally had priority in transport at a time when invasion was expected hourly—it is only during the past few months that movements of foodstuffs have come to enjoy an equal priority. On top of all these other difficulties, and at a time when it was realized that there was a serious deficiency of foodstuffs within the Province and call was being made on the wheat-growing areas of Northern India, the Damodar River in West Bengal, a perennial source of trouble to the Irrigation Department, burst its banks, forged for itself a new channel and in the process cut the embankments of the only two main railway lines leading from Calcutta to the North-West. This catastrophe occurred in July 1943 and repeated itself in August, and, until the engineers by an almost superhuman feat repaired the breaches, all traffic had to be diverted by single-track and extremely round-about routes. At a time, therefore, in the middle of 1943, when the food crisis had become really acute, the normal means of rushing relief from other parts of the sub-continent became closed.

There were, of course, other contributory causes of famine. The tendency towards inflation was much more marked in India than in England and there was universal nervousness throughout the countryside and determination to hold on to what one had got. Peasants, almost unconsciously, tended to hoard their surplus food grains instead of putting them on the market, though a Provincial-wide food drive did, in fact, reveal extremely little in hand with the small cultivators. Of much more serious consequence was deliberate hoarding by rice merchants waiting for the rise in prices that

they knew to be inevitable. (There had been a similar tendency in India to hoard and increase prices at the beginning of the European war, when there was no cause for alarm about the food position, but it had been quickly scotched by prompt action under the Defence of India Rules.) The merchants succeeded so well in their gamble that rice which in many places had sold for Rs. 4 or Rs. 5 per maund in times of peace shot up to the fantastic height of Rs. 80, or even Rs. 100. Any tendency to nervousness was also increased, in the early days, by Governmental uncertainty how far free trade should be permitted or how far there should be rigid control—right at the beginning, there had been an unfortunate attempt to control prices without controlling supplies and it was to this that the creation of what must be the biggest black market the world has yet seen was largely due. Later attempts to control the situation were only partially successful, owing to lost opportunities in the past, but how far the general scarcity can be attributed to the lack of a clear policy of the Bengal Government, how far to the selfishness of other Provinces which refused to part with supplies and how far to a policy of change and indecision at the Centre which allowed free trade between Provinces one day and forbade it the next: these are matters which must be left to the determination of history—it is certainly too early at present to form a reliable estimate. A combination of all these factors added to the general nervousness of the ordinary citizen, which in turn forwarded the aims of those traders who were so assiduously trying to rig the market.

Other causes of the famine have been assigned but they are of less importance. It was generally believed, for instance, that large stocks of rice had been made over to the military for consumption of the armed forces. This is true to a certain extent, but it must be remembered that rice scarcely plays any part at all in the diet of the European soldier; and in the case of the Indian soldier who eats rice, rice would have formed part of his diet whether he had been in the army or not. It is, however, true to say that soldiers' rations are more generous than those consumed by the average Indian cultivator and to this extent the army was a drain on the country's food production. For even in normal years the total production of the country, with imports, is not sufficient to support every citizen on what dieticians consider to be a minimum standard. But the excess absorbed by the army was not sufficient in itself to

account for the shortage. Another reason frequently assigned is the export of rice from Bengal out of India, particularly to Ceylon and East Africa. Such stories, however, were found to be grossly exaggerated. Exports were small in the first instance and mostly for the provision of Indian seamen and soldiers serving abroad, and they were stopped completely as soon as famine inside the Province became severe. This criticism had a political tinge to it and little foundation in fact.

Whatever the relative value of the various causes, it was obvious by the middle of 1943 that there was widespread distress over a large area of the Province. There had been danger warnings in the shape of exceptionally high prices for many months previously, but it was optimistically hoped in many quarters that more rigid control of supplies and distribution by Government would surmount the difficulties and that the crop of *aus* rice (the small early crop sown from April to May), normally harvested about the month of June, would be sufficient to tide the cultivator over the worst period until the main or *aman* (winter) rice crop was harvested in December. The hope was unfulfilled; the *aus* crop was not an exceptional one and much of it did not find its way onto the market. Consequently, by the month of August the most appalling sights began to be witnessed in the big cities, particularly in Calcutta. Destitutes flocked in in droves, principally women and children, squatted on the streets and presented a shocking spectacle of starvation, disease and misery. Many of them were, it is true, professional beggars, unable to follow their usual means of livelihood in their own villages, but many others were landless persons reduced to the level of beggary and starvation. Calcutta, to them, had become a Mecca, even an Eldorado. There was food in Calcutta, much more food than in the villages, it was said; it was only when they reached the streets of the city that they realized that they were not paved with gold nor even with grains of rice. But the discouragement of the first-comers did not deter the remainder. Ticketless travelling on the railways is a social evil long indulged in India; ticketless travellers poured in now in their thousands, principally from south of Calcutta which was one of the areas worst hit. Despite yeoman work done by various relief organizations with the aid of stocks made available to them by Government, Calcutta remained the focal point for all who were feeling the pinch in their own homes, until the *aman* crop was harvested and it was possible to repatriate the destitutes to their

own homes with a reasonable assurance that there would be sufficient there for them to eat.

The troubles of the destitutes, however, were by no means over with the harvesting of the *aman*. The poorer class of peasant never has much resistance to disease, for his normal diet does not permit of it, but the effect of starvation or semi-starvation over a period of many months completely destroyed what little he possessed. Cholera, always a menace at the end of the monsoon, broke out in epidemic form, but of far greater danger was the outbreak of malaria which ravaged the whole of the eastern part of the Province—a menace all the greater as this area, being constantly washed and irrigated by the rivers, is normally almost entirely free of the disease and hence the inhabitants had acquired no immunity. Whatever the origin of the epidemic—which may partly have been due to infected mosquitoes brought in with the armies from Burma and Assam—it spread like wildfire and was of the malignant type. A further catastrophe arose from the fact that the destitutes had no money left to purchase their annual supply of cheap cotton clothes, the price of which as of everything else had risen exorbitantly; with the coming of the cold weather, they had not even blankets to keep themselves warm, with the inevitable consequence that malaria developed into pneumonia and death followed, in many cases, within forty-eight hours. Even the better-off classes were affected and in some villages difficulty was found in mustering the necessary labour to cut the crops ready for harvesting in the fields. Even at a time, therefore, when the food situation gave reasonable cause for satisfaction with the harvesting of the *aman*, there were still plenty of grounds for despondency in the general deterioration of public health.

The effects of the famine—or, one would rather say, the manner of dealing with it—ran no more true to type than the causes. One of the main methods of relieving distress in Bengal in the past had, naturally, been to increase imports from Burma, an almost bottomless granary. This source of supply being completely closed, there were no alternatives to turn to, and the importation of foodstuffs such as *jawor* (a form of millet) and *bajra* (used for making a kind of porridge) met with little enthusiasm since the Bengali is extremely conservative where his food is concerned and will look at nothing but rice, lacking though it is in the ingredients necessary to constitute a balanced diet.



In addition to malaria, Bengal was faced in the autumn of 1943 with a serious outbreak of cholera caused by insanitary drinking water. The only solution in rural areas is the sinking of tube-wells. (Left) A village tube-well. The plinth is not normally constructed on as wide a basis as this. (Opposite) Test relief works are normally started in times of famine so that able-bodied men can earn the relief granted to them. Relief labour engaged on the excavation of a tank

Secondly, it has been an axiom of famine relief administration in India in the past that the responsibility of Government extends to the saving of human life and that any further demands of the destitutes must be met out of private charity. Gratuitous relief will always be provided by Government to women and children and those incapable of working, but in the case of able-bodied men it is expected that, if they are in need of relief, they should earn it. With this object in view, what are known as 'test relief' works are started in famine areas, in which various forms of labour, such as road-making or excavation of tanks, are provided and paid for at cheap rates. The response to such works is the 'test' of how far they are necessary; wages are kept purposely low in order that labour may not be diverted from more normal occupations. The numbers attending such test relief works are, in normal times, a sure indication of the amount of distress in the District, for nobody is likely to come to them who is not in dire need of assistance.

Test relief works, however, were a complete failure in many areas, where they were attempted in 1943, and had to be closed down almost immediately. An exception must be made in the case of the District of Faridpur, where test relief labour was used to bring fallow lands under cultivation for the 'Grow More Food' campaign. The reason for the failure elsewhere is a curious one. Although there was acute shortage of foodstuffs, there was little shortage of money for those capable of working. Agricultural wages were considerably higher than in previous years, and

those working on construction of aerodromes and other military works were paid very highly indeed by comparison to what they would normally earn. Owing to the general debility of the population, there was in fact a shortage of labour on the market and hence relief works at rock-bottom wages had little chance of success. The famine was one of food and not of money to buy the food, although it must also be emphasized that the rise in agricultural wages, steep though it was, was nothing like the rise in price of foodstuffs. But it was in itself sufficient to upset orthodox methods of providing famine relief.

As often happens with catastrophes of nature, this catastrophe arrived before any steps had been taken to counteract it. In consequence, the relief measures taken may have appeared at first to be hurried and belated. As Calcutta is the largest city in India, and immeasurably the largest city in the Province of Bengal, it became the focus of attention of all those desiring to assist in relief work. Free kitchens and cheap canteens were opened in all quarters of the city and Government made available stocks to cook standard meals of gruel. This, however, had the inevitable and foreseeable result of confirming everybody's suspicions that Calcutta was a land of plenty and thousands more began to pour in from the surrounding countryside. The more free kitchens there were opened, the greater the number of destitutes that thronged into the city. It was only slowly realized by those contributing money on such a lavish scale that what was needed was a system of relief in the remotest



villages, to prevent destitutes from coming to Calcutta, for in the villages it is always possible to supplement one's diet with roots and herbs, which is not possible in Calcutta, while the approach of the cold weather and the possibility of bombing raids by the Japanese made it undesirable that the city's streets should be crowded with destitutes with no homes to go to.

Relief work in the villages could not be really satisfactory until supplies were assured, and until November 1943, when the aman began to be harvested and the army lent its assistance in distribution, movements were very slow. Nevertheless, the city of Dacca gave a commendable lead to the rest of the Province by setting up an elaborate system of relief kitchens, managed by non-official committees to whom the authorities handed over all supplies within the city limits. Dacca has enjoyed an unenviable reputation during the past few years both for communal riots and for students' disturbances, but both have completely disappeared in the present emergency, and the only form of rivalry now evident is rivalry to be the first to administer relief.

Other districts did their best with the resources at their disposal, with varying success. The District of Faridpur showed originality by establishing a system of work-houses, in which the inmates had to perform simple chores such as the husking of paddy or making of ropes and fishermen's nets, the principle being adopted that nobody would be entitled to relief without work. In this District it was found possible to close down

free gruel kitchens entirely, anybody demanding relief being immediately drafted into a work-house. This had the effect of excluding the professional beggar and the work-shy who would certainly be found where free meals were provided and nothing demanded in exchange.

The Red Cross authorities, also, actively encouraged by Lady Linlithgow, the ex-Vicereine, were generous in their offers. In particular, they were responsible for the supply and distribution of large quantities of tinned milk, mainly from America, which was instrumental in saving the lives of many mothers and small children. The necessity for this is likely to continue for a considerable period, if the youngest generation of all is not to grow up suffering from a multitude of deficiency diseases.

As soon as rice began to flow freely into the villages, partly from natural causes and partly from the assistance rendered by the military authorities, it was possible to think of clearing the cities of the surplus that had emigrated from outside. The general plan was to collect lorry-loads of destitutes from the free kitchens, take them to collecting-centres specially opened for the purpose, sort them out into the various Districts to which they belonged and send them out of the city to repatriation camps, where they would rest for a few days until taken back to their own villages. There they would be provided with tickets for free meals so that they would not be tempted to return to the city. The system was by no means successful at first, as many villagers were genuinely terrified of returning to the



(Top) The women of Bengal have been doing excellent work in assisting relief operations: voluntary workers preparing the meal at a free kitchen in Dacca. The distribution of large quantities of milk by the Red Cross authorities was instrumental in saving many lives. (Bottom) Free milk canteen in the city of Dacca



homes which they had only left under threat of immediate starvation, and it took a considerable amount of time to persuade them that conditions had now improved. Mischief-mongers as usual were busy spreading rumours that Government was not really repatriating them but was going to draft them into military service or sew them into sacks and drown them—utterly fantastic stories which nevertheless found a number of credulous listeners. Repatriation, therefore, was a slow process, and it was sometimes found that persons repatriated found their way back into the city again.

There was one class of persons for whom repatriation was exceptionally difficult. Many children were found wandering about the streets of the big towns, having either lost their parents through death or become separated from them in the general confusion. There were a few happy cases of reunion but for the most part there was nobody in the world to care for these orphans, many of whom did not know their village of origin or were too frightened to name it. Temporary orphanages were opened in large numbers. Other Provinces generously came forward with offers of support, but the eventual fate of many of these unfortunate children is still uncertain. They will probably be the responsibility of the State for many years to come.

Of all the aspects of the famine, however, the problem of the health of the destitute was the most serious and the most difficult to deal with. Cases of collapse in the streets of the big cities were daily occurrences, and special hospitals had to be opened to deal with the large numbers of starvation cases, many of whom died as a result of their sufferings. In this connection it is worth noting the rôle played by the A.R.P. Services in all areas where they were established. First-aid parties and ambulances hourly answered calls for assistance, and the fact that many lives were, in fact, saved, was due in large measure to the promptness with which the A.R.P. Casualty Services attended them.

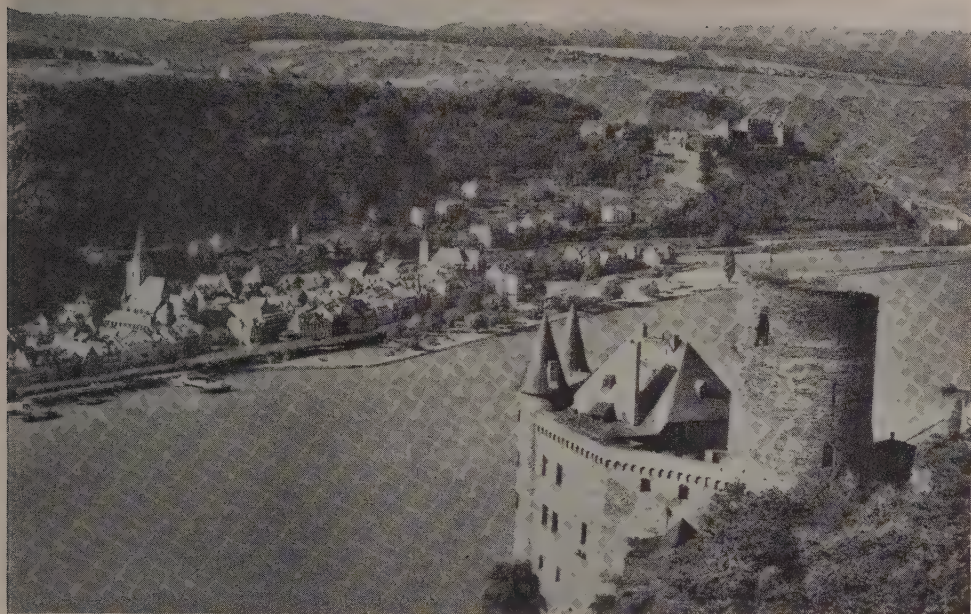
Even those who did not succumb to a prolonged period of malnutrition could not be completely cured within a short space of time. It was found necessary, therefore, to open convalescent camps where starvation cases could rest after being discharged from hospitals, the distinction being roughly the same as that between front-line and base hospitals in the army.

At first, medical relief was only viewed from the angle of cure of cases of starvation, but, as already indicated, it soon became obvious that the Province was in the grip of an epidemic of malaria in every way as serious as the famine itself. The ordinary medical facilities available in the rural areas of Bengal were completely insufficient to deal with the problem; there was a shortage of all medicines, particularly quinine, and there was a shocking black market trade in the bare necessities of medical relief, quinine selling in some areas for as much as the equivalent of a shilling a tablet. Here again, communications and transport proved one of the major obstacles in the path of relief, but once more the army stepped in, both with supplies and, more important, with completely equipped medical units, static and mobile. The civil authorities, also, quickly expanded their medical arrangements. Apart from an enormous expansion of district hospitals, small hospitals were hastily erected in temporary structures in large numbers of villages in the affected areas, all of a standard size, so that packages of supplies and medicines could be made up easily in Calcutta and forwarded as quickly as possible. Such hospitals once more pre-

served the distinction between front-line and base treatment centres, one lot catering only for acute cases and the other for chronic cases and convalescents. In village areas, the Bengali equivalent of the English Home Guards have proved most useful in taking sick persons to these camp hospitals.

There has been little dearth of voluntary help in these measures for relief. In particular the women of Bengal, normally somewhat shy of coming out in public, have performed excellent service in running food kitchens and in nursing at camp hospitals. Destitutes who are discharged from such camps often stay on to render assistance to their fellows less happily recovered than themselves, giving their services voluntarily in return for food and lodging. The civil authorities have, of course, been engaged on such operations largely to the exclusion of their normal duties, while the Province owes an immense debt to the help rendered by the army, both in carrying foodstuffs and in assisting with medical aid. The army, in its turn, has been nobly assisted by the Provincial Civil Pioneer Force which has loaded and unloaded wagons and lorries and prepared roads over which the military vehicles are to carry the food.

It is too early at the time of writing to forecast the ultimate results of the famine to Bengal. Much will depend on how far reserve stocks can be laid in by Government to tide over the awkward period between the harvests of 1944, and this in its turn will depend on how far cultivators and middlemen will be discouraged from hoarding. The public health situation, on the long-term view, is discouraging. The malaria epidemic has obviously a long time to run to complete its course, despite the best measures of relief. It is obvious, also, that the loss of strength and vitality to those sections of the population affected must be great and lasting. The consequences of a famine such as Bengal has been through do not wear off in a day; even with a series of good harvests it may well be two or three years before Bengal regains her normal economic prosperity, and even this will depend in large measure on the fortunes of the war. She has been through a harrowing experience which she is not likely to forget for many years to come.



From Raymond Bush

The Rhine, with, in the distance, a medieval village dominated by the ruined castle of Rheinfels. The round keep of the ancient castle in the foreground has been incorporated in a more recent building

a position of great economic importance. For centuries Germany dominated the overland trade routes and inland waterways of western Europe. Her geographical position thus made of her a highway and a clearing station. While the commercial advantages were great the attendant political disadvantages proved to be even greater, for the interests of the people were drawn continually away from their own country, while the State lacked the necessary centripetal force to counteract the outward magnetism. The political development of Germany was, and is, out of step with her cultural and economic progress, a discrepancy which accounts for some of the contradictions in her conduct.

No other nation-state has changed its outline or shifted the balance of its governing authority so often as Germany. From the beginning her growth was haphazard. The upheaval of population in central Asia, which in the 4th and 5th centuries sent wave after wave of barbarian tribes to submerge the Roman Empire, was slow to subside. Late-comers found the civilized lands beyond the Rhine and Danube already saturated. Germany, never, except in the south and west, more than an outpost of the Empire, now became the overflow. It was not a fortunate position, since pressure from the still nomadic

tribes to the eastward continued long after further movement to the west had become impossible. Though it would be rash to determine the political characteristics of the numerous tribes from whom the future German race was to spring, it is worth noting that they were from the beginning a people of 'have-nots', a people forced to make do with the uncultivated wilds because the Goths, the Lombards and the Vandals had already occupied Roman Gaul and Roman Spain, Roman Italy and Roman Africa.

Whether German character was indeed affected by this halting of their westward march, it is impossible to say. It was certainly affected in a negative manner by exclusion from the sphere of Roman influence. Some German historians have sought to trace throughout their country's history a sharp fissure between the western and south-western districts, along the Rhine and the upper Danube, which had belonged to the Roman Empire, and the regions in the outer darkness beyond. The distinction is not as clear as theory can make it appear, but it is certainly true that mellowing and beneficent influences in German history come more often from these regions, only to be dispersed in the bleak atmosphere of the northern plain.

No division is ever clear cut. There was,

of course, no moment during the migrations when the last tribe squeezed itself into the pale of the Roman Empire and slammed the gates in the face of the next. Just as a fringe of Roman provinces in the west and south were ultimately to be part of Germany, so in the north we find one tribe half in and half out of the old Empire. The Franks gave their name to France; they also gave it to the province of Franconia (Franken) in Germany. Had the Franks maintained their supremacy in the north-western section of Europe some kind of amalgamation between the romanized and the barbarian world might have been possible. They were a people who combined the enormous vitality of the barbarian with considerable adaptability and political instinct. Moreover they produced several leaders of unusual ability and one of genius.

It is typical of the modern German attitude to history that they have rejected Charlemagne as a Frenchman. Charlemagne, the greatest of the Frankish kings, subdued the pagan Saxons along the Weser and thus laid the first outpost of Germany's eastward expansion, brought under control most of the disordered peninsula of Italy and revived in

his own person the Roman Empire of the West. The lands which he ruled covered virtually the whole of modern France, about a third of modern Germany, and something over half of Italy. It was not by any means an ideal State, geographically speaking. Italy at any rate was superfluous. Yet had this Franco-German Empire survived it must have been a consolidating force in Europe, controlling, as it would have done, the problematical German tribes. Its capital was situated significantly in the borderland between civilization and barbarism, at Aachen on the Rhine.

French and German historians alike trace the troubles of the Rhenish frontier to the disintegration of this Empire. It could not indeed have happened in a more unfortunate manner than it did. The three grandsons of Charlemagne each assumed a portion of it: Charles, the youngest, was given the greater part of modern France; Lewis, the second, known as Lewis the German, took the regions east of the Rhine; Lothar, the eldest and the stupidest, was given as narrow a strip of land as could possibly be carved out to include the two capitals of the Empire, Aachen the administrative centre, and Rome the spiritual head. A ribbon of country, including most



Rischgits Studios

Aachen (Aix-la-Chapelle), the capital of the Frankish Empire of Charlemagne. Part of the cathedral, seen in the centre, dates from his time and he was buried in the crypt

of the Rhine and the Alpine passes, was thus stretched out under the control of a weak ruler, at the mercy of two strong neighbours. Charles and Lewis made short work of Lothar. Over the spoils they came near to making short work of each other. No one can now exactly trace the battle-field of Fontanetum where they and their followers clashed, but it lies somewhere on the Flemish border ringed round with a thousand later battle-fields. Later they signed a treaty at a pivotal point on the new frontier: at Strasbourg. The debatable land had been created. As for Lothar, the only mark he left on Europe was the echo of his name in the province of Lorraine.

To the east of the debatable land Germany now began to develop as a separate entity. Here, far more strongly than within the ancient Roman Empire, tribal organization persisted as an undercurrent long after the tribes themselves had ceased to wander, and the country had been parcelled out under the feudal system. Traces of tribal law can be felt in the more brutal persistence of the blood-feud in Germany, and in the obstinate refusal of local privilege to be assimilated in any general system of justice. The occasional protests of criminals that they had a right to be tried by the law of their own people where-soever in Germany their crime had been committed, occur as late as the 17th century.

The most serious consequence of this failure of the nation to dissolve the tribe was its effect on German feudalism. In no other country of western Europe did the barons attain to, or hold for so long, such far-reaching rights. In their struggle against the centralizing authority of a King or Emperor, they could rely on support from their own people which has something in it of tribal devotion to a chieftain.

This powerful force increased the danger of disintegration which was always inherent in Germany's geographical situation. That part of Germany which had been part of the Frankish Empire covered roughly the western third of what is Germany today. Threatened and battered along its eastern edge by still unsubdued tribes, the German state grew at the expense of these neighbours. Building out into the uncivilized land first a bulwark, then a colony, then a further bulwark beyond, Germany stepped gradually eastward from river to river, from the Weser to the Elbe, from the Elbe to the Oder.

The migrations of peoples do not halt of themselves: when the Germanic tribes were brought up short in their westward march, the tribes in their rear were still pressing on.

They continued to do so for centuries. The Germans, determined to hold at least what they already had, turned and fought. They are hardly to be blamed for that; where they made their error was in not knowing where or when to stop. They acquired simultaneously a panic-terror of encirclement and a highly aggressive frame of mind towards their neighbours. Insensibly the establishment of defensive lines towards the east, the gradual assimilation of heathen and barbarous peoples, the legitimate colonization of waste land, developed into a policy of attack. The *Drang nach Osten* (Drive to the East) which is so marked a characteristic of early German history could only be checked by two things, a geographical barrier or a cultural barrier. But there is no geographical barrier on this eastern frontier; the monotonous sandy plain was an irresistible temptation.

It was a cultural barrier which stopped them. Quite suddenly the *Herrenvolk* came into collision with a civilization different from, but fully as advanced as, their own. This was the civilization of the Slav peoples, derived from that of the Eastern Roman Empire, from Byzantium, just as that of the Germans themselves was derived (though at second hand) from the Western Empire. At this point colonization frankly gave way to aggression. Held back, defeated, they retired only to come on again. The spontaneous need for expansion exhausted itself; it was kept alive by the policy of German rulers. In the 17th century the Czechs were ruthlessly subjected to Austria; in the 18th the King of Prussia and the Empress Maria Teresa divided western Poland.

None of this, however, really gave to Germany frontiers which her rulers or her people regarded as satisfactory. Held up on the west because the Roman Empire had reached saturation point before they came, they were held up on the east because the Slav nations had stabilized and solidified in their rear. It is a fundamental maxim in German policy that existing frontiers are merely provisional.

While the frontiers remained thus wilfully undecided, the heart of Germany also failed to materialize. Anatomically speaking, the state was a monster. Conditions on the frontiers were partly to blame: German energies were dispersed round the perimeter instead of being concentrated at the centre of the kingdom. The power of the Emperors (German Kings had resumed the ridiculous title of Roman Emperor in the 10th century) was perpetually drawn off to the extremities of their kingdom, or more serious still, into Italy, where for centuries they



Dorien Leigh

sought to establish a true imperial authority.

In the centre, meanwhile, with its roads and its waterways, a commercial Germany of a different kind was developing independently of the imperial state. The same thing happened among the cities of the northern coasts whose commercial interests united them with England, France and the Scandinavian countries more closely than with the rest of Germany. Against a central government which was rarely more than a name, the active merchants of Germany soon established rights of their own. The free cities which were to be for centuries the true centre of German wealth and civilization contributed little or nothing to the idea of the German state. They made their own laws, existed independently of each other, levied their own taxes, even entered into their own agreements with foreign powers. Nor were the free cities the only independent powers in Germany. Some clever dynasts had succeeded in accumulating large provinces in their hands, shaping virtually independent states like Saxony and Brandenburg; but the pettiest barons and knights had often managed to establish an independence no less absolute.

Goethe's *Götz von Berlichingen* boasted that he was dependent on no one but "God, the Emperor and myself". Dependence on the Emperor, it should be added, was theoretical.

The imperial dignity, faintly following the Roman model, was elective. Naturally enough the magnates responsible for choosing an Emperor were careful to avoid setting up a man or a dynasty stronger than themselves. As a result of the sudden switching from dynasty to dynasty in the Middle Ages, the German State had no chance to solidify (as the French did) about the personal lands of one family. The centre of gravity was constantly moving. We find it at Aachen and generally along the Rhine during the 9th and 10th centuries, with a swerve eastwards to the Harz Mountains and Goslar in the 11th, then further south, to Swabia with great assemblies at Bamberg under the Hohenstauffen. The Rhineland, with Speyer for the city of the Imperial Diet, was favoured by the earlier Habsburg; their later descendants converted Regensburg on the Danube into the official meeting-place, but used their own lands in Austria as the basis of their power, their capital at Vienna. Under the Emperor

(Left). Goslar in the Harz Mountains, the favourite resort of the early Saxon emperors during the height of their power in the first half of the 11th century. Intent on reviving the glories of the past, 19th-century Kaisers and architects have been responsible for much misguided 'restoration'. (Right) The quayside at Lübeck, showing some of the North German gabled houses. Once the queen of the Baltic and leading city of the Hanseatic League, Lübeck suffered partial eclipse owing to the rise of Hamburg and Stettin. Its trading connections with Bordeaux, dating from medieval times, gave it the just reputation of providing the best claret in Germany



Dorien Leigh

Charles IV in the 14th century Prague was to all intents the capital of the Empire; he himself, King of Bohemia by inheritance, partly Czech, and of the dynastic ruling family of Luxembourg, was perhaps the only Emperor whose private lands might have solved the German problem. He held as it were both frontiers—the Latin at Luxembourg, the Slav in Bohemia. A statesman of vision and patience, he might have achieved much had he had successors worthy of him. He, like Charlemagne, has a 'bad press' in Germany. Certainly his Empire would have solved the German problem by submerging the German centre between the French and Czech outer provinces.

In the 16th century the marriages of royal families began to make astonishing patterns in European geography, more particularly the marriages of the Austrian Habsburg. Charles V, on whom all the chief possessions of his family devolved, was elected Emperor in 1520. He controlled, besides Austria, Spain and the Netherlands. The Netherlands at this time were at least technically a part of the Empire, and their relations with the Rhineland and North Germany were

exceptionally close. Charles V left them by will to his son, the King of Spain. This of course did not in theory prevent them from being still a part of the Empire; but imagine a situation in which an outlying province of great importance, controlling the delta of the Rhine and the Narrow Seas, is deliberately placed under the control of a foreign power. Yet so ill-developed was Germany as a nation that anomalies of this kind became in the ensuing century the rule rather than the exception. We find the Kings of France, Sweden and Denmark holding lands inside Germany, and German princes holding lands outside it.

The Reformation, meanwhile, had divided the country against itself. Both Protestants and Roman Catholics sought foreign allies; in the first half of the 17th century the Empire degenerated into little more than the fighting ground for all Europe, as one foreign power after another was called in to settle a problem which the German nation had failed to solve for itself. Spanish, Swedish, Danish, Flemish, French and Hungarian armies wasted the land for thirty years while German patriots vainly longed for a saviour who would bring



Paul Pöpper



Maxim Zelik

(Opposite, top) Regensburg (Ratisbon) on the Danube was during the 16th and 17th centuries the seat of the Imperial Diet. A young woman of Regensburg attracted the attention of the Emperor Charles V during the Diet of 1546 and became the mother of Don John of Austria, an incident much celebrated in local tradition. The cathedral is a noble example of South German Gothic. (Bottom) Bamberg, a picturesque city in Franconia situated on the Regnitz, was for a short time in the 12th century the seat of the Diet. The magnificent Romanesque cathedral was founded by the Emperor Henry II in 1004. It contains his tomb. (Right) Speyer, a view of the cathedral showing the south side of the nave, a wonderful example of German Romanesque. Speyer was occasionally used for meetings of the Diet. Bernard of Clairvaux preached the Second Crusade here in 1145, and Rudolf of Habsburg, founder of the dynasty (died 1291), is buried in the crypt. It suffered heavily from the restoring zeal of Kaiser Wilhelm II





View from the Danube



View from the Danube

(Top) Vienna as it was in the first half of the 19th century: baroque buildings and open spaces, the whole dominated by the medieval cathedral of St. Stephen. Behind are the mountains which fringe the Danube. (Bottom) The great Charles Bridge at Prague, planned in the 14th century by the Czech Emperor, Charles IV

union to their distracted country, and once or twice imagined that they saw him upon the horizon.

There were in fact two possibilities during the war. The first, and that which came nearest to realization, was the amalgamation of the entire country under Roman Catholic Habsburg sway, ruled from Austria. The weakness and division of the northern provinces and the genius of the imperial commander-in-chief Wallenstein made the realization of this plan all but possible. The state created would have pivoted on the river Elbe—the reason for this being that Wallenstein was a Czech and moreover a man of great personal ambition. He sought to build up a new political entity based on an extension of his own country Bohemia, and in particular of his own lands. When he had dispossessed the Duke of Mecklenburg and carried the Austrian eagles to the Baltic to lay siege to Stralsund, it looked as if the new state had been born.

At this moment the King of Sweden, Gustavus Adolphus, intervened. For the preservation of his own control of the Baltic it

was evident that he must throw back the encroaching Habsburg state. But he was a man of profound religious convictions and of no less Napoleonic vision than Wallenstein. His plan for Germany was a northern confederation linked up with the Scandinavian powers, from which the Habsburg south could secede if it liked, a broken and emasculated fringe. His death in battle and Wallenstein's murder a year later put an end to both plans.

What actually happened during the Thirty Years War was the final destruction of imperial prestige—henceforward the Habsburg dynasty was to concentrate only on ruling its private dominions—and the collapse of the cities. The discovery of the ocean routes and the diversion of trade to all quarters of the globe had in any case partly robbed the free cities of their glory before the war. The war completed the process. There grew up instead the 18th-century Germany of small despotic principalities, principalities where the arts—on the French model—flourished, and which left monuments more beautiful, more civilized, more perhaps to our taste than the ornate Gothic of the cities. Such is the



Rischgitz Studios

Cologne, the great port of the Rhine, showing the cathedral in the opening years of the 19th century before the nave and towers were built. Cologne was the seat of an archbishop who was a free prince and one of the Electors who chose the Emperor; it was also a free Hanseatic city having close trading relations with the Netherlands



(Above) The charming city of Dresden, though of medieval origin, derives its baroque character from the 18th century, the heyday of the independent German princes. Patrons of the arts and of architecture, they enriched the city with spacious buildings and filled the Royal gallery with an exceptionally fine collection of paintings. As rulers they were, however, undistinguished and reactionary.

(Left) Market place of Nürnberg and the celebrated fountain of Neptune. Nürnberg, which contains some of the Imperial insignia, was in the later Middle Ages a frequent meeting-place of the Diet. It was, however, better known for its commercial activity and the number of its powerful guilds. Besieged in the Thirty Years War, it suffered irreparable damage. (Opposite) A corner in the old town of Prague showing some of the baroque houses which are a feature of that quarter





Paul Pepper



Dorien Leigh

Munich. The gaily painted clock tower is a frequent and delightful feature of south German architecture. Although an ancient city, Munich, as the capital of mountainous Bavaria, did not emerge into the centre of German politics until the 19th century

Zwinger at Dresden, or the noble episcopal palace at Würzburg with its lovely Tiepolo ceilings. Yet politically it was a vicious civilization, based on a class of subservient officials, and neither recognizing nor fulfilling any function in the political education of the people.

It was moreover a more feeble civilization

nationally than any which had preceded it. The egoism and weakness of German rulers yielded the western frontier step by step to France, and the 19th-century neurosis about the Rhine was thus added to the others which had accumulated through the centuries. Yet this was something for which Germany had herself to blame.

The withdrawal of Austria from all pretensions to control the north made way for the unexpected growth of another power. Prussia-Brandenburg, in the 17th century the most contemptible of Germany's larger states, bankrupt, mortgaged and infertile, with a miserable capital city built of wood, soared into the ascendant under the rule of successive able and unscrupulous rulers. With an eye to essentials, they cleared the Swedes off the Pomeranian coast and acquired the means to sea-power, solved the frontier question almost to their satisfaction by dividing up Poland with Austria and Russia, and gained both a strategic outpost to the south-east and invaluable mineral resources by annexing Silesia from a protesting Austria. The unification of Germany under Prussia in the 19th century was the logical conclusion. Taking advantage of the resurgent nationalism of the time and the evident incapacity of the other German states, Bismarck re-created the Em-

pire with Prussia at its head. It was left, however, for Hitler, who combined in his person all the neuroses diffused among the German people, to realize the wildest of all Germanic 'imperial dreams, to reincorporate Austria in the Reich and extend German dominion over half Europe.



Rischgitz Studios

Three views of Berlin. (Top, left) In the early 19th century it still, owing to the dominating French cultural influences of the 18th century, had something of the character of a French provincial city; (right) the celebrated Sieges Allee (Victory Avenue) planned at the height of Prussian ascendancy, flanked with eagles and trophies, and (below) Hitler's Chancellery as it was at the outbreak of the present war



Paul Popper

The interaction of geographical position and political development has made of the German people a problem which all but defies solution. Their achievement in all spheres except the political has been creditable, in some cases outstanding. But it is the achievement of individuals, or, at most, of small groups. They have not in the course of their history shown the least political insight. They are not merely bad neighbours, they are in the last resort bad citizens, lacking self-assurance and self-respect. For fifteen hundred years they have found themselves unable to accept their position in the European continent. What that position will be in future, no longer rests with them.





A Letter from Marathon

by W. V. BOWMAN

As the wheel comes full circle and the once all-conquering German Armies are forced to fight defensive battles, the Campaign of 1941 in Greece may seem far away. But to those who took part in it, it will always have an overwhelming significance; for it revealed to them the spirit of the Greek people, as sublime today against the Germans as once, two thousand years ago, against the Persians. This letter, printed as it was written at the time—while the author was waiting at Marathon to be evacuated—is from a British soldier who had served throughout the campaign as Medical Officer to an Artillery Regiment

A WEEK-END atmosphere today: though the end is not of the week. Woke at midday and just stayed in my fleabag as the haze of cloud cleared and the day warmed. My orderly brought me some hotted-up beans and boiled bacon. It is a good enough meal and has been so for the last few breakfasts, lunches and dinners. We are in luck to have it: it is a step up from bully and biscuits: it comes to us as we move back and raid our own dumps, so that "Jerry won't have it". We have spent quite some time and effort so that "Jerry won't have it". I have just sawn the tyres off the truck, put a pick into the radiator and run her without oil. That is among other things, and have watched gunners cutting up their

clothing and our tents: breaking chairs and tables. We don't like Jerry.

Have now had to get up to weave some more branches to camouflage the truck and lie on my bedding propped against the stone surround of an olive tree. A tree the father of olives, with a twenty-foot girth, due to two trees growing together. I feel that they started life about the time of Queen Bess. They are pollarded according to custom. I am afraid that we knocked some branches off him, as we came in last night at four o'clock. These branches we have used to hide us from 'air observation'.

He is a good companion, and will be for the day. We may not move from under his

shadow, nor light a fire, for fear that the *Luftwaffe* should see us and dive-bomb and machine-gun our departure.

Well, it's gone along to two o'clock already and we have had quiet: there's only been the drone of bees gathering honey and some linnets and goldfinches chaffering across the way by their nests. Now I've cheated and been out of my tree shadow to walk across to the next tree for my hat. A pine tree with long needles, through which the wind 'soughed' in a way particular to this country. With everything else, it breathed ancient greatness, and minded me of a drama, that considered murder and death crude, and not to be represented but suggested: where choruses moved in flowing robes.

Have just flattened out immobile as our masters passed over. They haven't noticed us. No suggestion about their drama. They come preceded by a clangour, as of Thor; whiners tied to their tails, not to leave anything to the imagination. There follows another: we ourselves have gone from the skies, and that is part of our troubles. We do well enough otherwise. Mow down his infantry, blow up his tanks, and make him pile up troops before making an enormous mass attack.

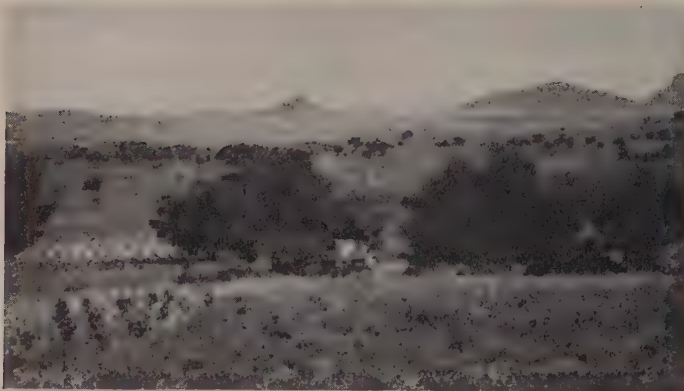
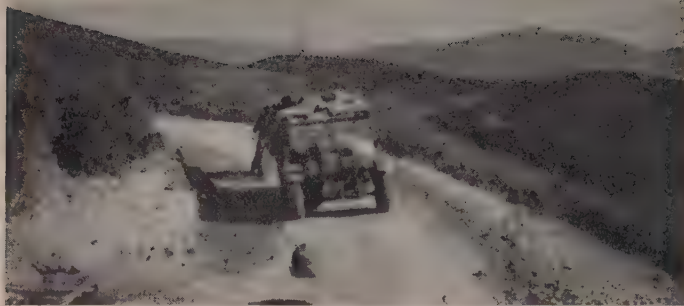
We arrived here last night, only having a few miles to do, but taking from nine o'clock into darkness: waiting in the dark with vehicles packed head to tail, while the leaders found room under the trees: falling asleep in our seats and waking to drive a few hundred yards. The night before we had driven all night. Away from our last position at Thermopylae, where the gunners had worked until the last minute, wrecked the guns, hopped into vehicles and driven off to timetable: each unit taking up its position in a long line of vehicles that had cheated the Hun. Later, we put on side lights and looked like a lighted seaside resort on the move. Then headlights for us to speed along the roads. No guns to tow, any truck that stopped was thrown off the road. By first light we were near enough and went into a hide in a pine-treed heath at Eleusis. Ate, slept and washed and licked our wounds, which meant that half a dozen wounded came to me. They were incredibly good. No bad cases; but it is good to see men under control, "sorry to trouble you" and with no complaint of pain. When they had been wounded and only had first-aid treatment and driven crowded in trucks through the night and over bad roads. They were N.Z. and English troops who certainly can take it; and have a considerable

respect for each other.

From this hide, the air seemed quiet, so we made a dash across the town (Athens) on the way to the beaches. Still there were a few Greek soldiers straggling along the road, but evidently on their way to their homes. Before this business started the German propaganda had repeated "the English will come and fight; but cannot give you effective aid; the result will be your defeat and the ruin of your country and homes". Going up first through the country, every man, woman and child had greeted every vehicle on every occasion with a 'thumbs up'. One wondered what attitude they would take as we scurried by on our way to leave. Thumbs still came up: people smiled and were friendly, as if all

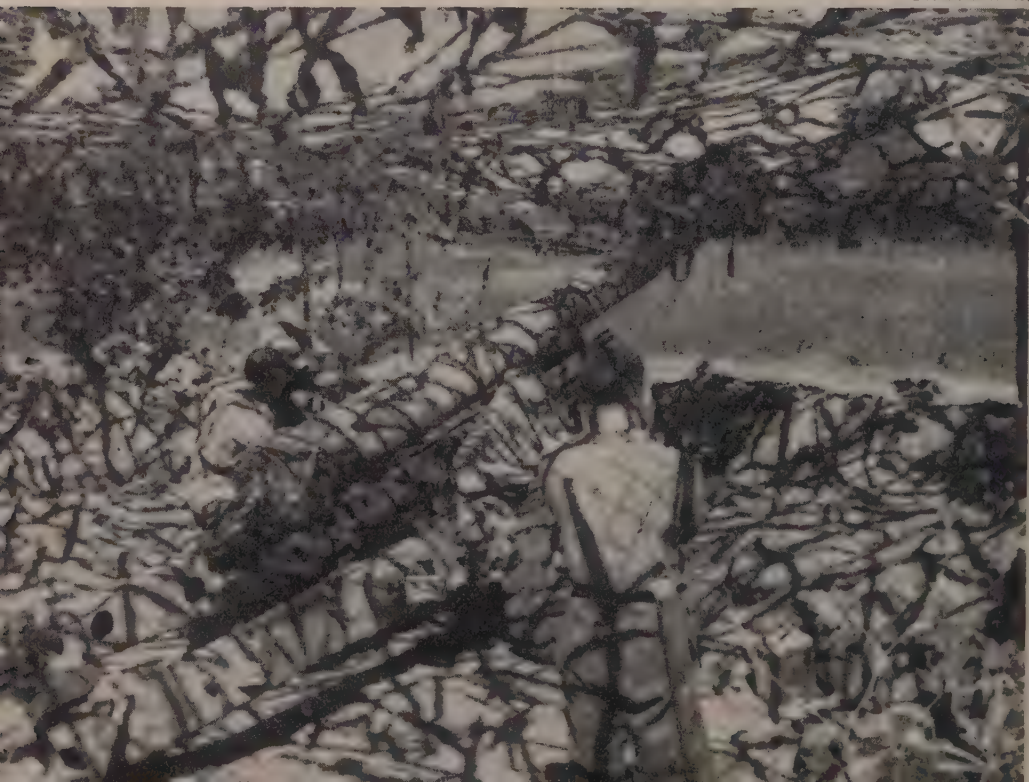


This map shows the main places in the battle areas of the Greek Campaign of 1941. The bulk of the Greek Army fought on the Albanian front, while some Greek troops were defending Salonika, and others were with the British forces disposed about Florina to face an attack from the north-east. The Germans made a rapid advance through southern Yugoslavia and outflanked all these positions, then continuing due south through Monastir, to attack the British and turn south-west behind the Greek troops on the Albanian front. The British had to retire towards Larisa and Thermopylae; while the Greeks, lacking the mobility of mechanized vehicles, had no alternative but to remain in their positions and were overcome piecemeal. The photograph on the opposite page shows one of the British 4.5 'gun-hows' firing before dawn



(Top) It was through this kind of country that the Greek Campaign was fought. (Middle) A photograph taken at Marathon, looking towards the sea. The author's unit sheltered for a day under these trees before being evacuated from the beach. (Bottom) One of the guns of the author's regiment under protective netting known as 'scrim'. At the end of the campaign such fine weather as this photograph shows enabled the unopposed German air force to work in the best of conditions. At the beginning, when the allied forces also had an air force, there was cloud and no 'visibility'. (Opposite) A unit on the move and a ditched truck. In the retreat, any truck or car which stopped was thrown off the road

From the Author



was well. Perhaps they didn't know the situation. "Goodbye." We went on. "Come again." "You will return." "Well done." On, and passed through the town centre. People came on to the pavements, and lined the squares. Clapping started and spread along the route. Dear, sweet people: they are 'spunky'. Now that it has failed, they have no bitterness, a remarkable people. We must help them later. I talked to one: who said that they had feared that this would result, but were still certain that we would win in the end. Said, too, that they expected to be included in the blockade and still wished us good fortune.

The last fight at Thermopylae was a good scrap, though their planes were a nuisance. We were able to stand and fight and inflict casualties before moving on. A lovely place in an entirely gracious country; we must visit after the war. Whistle down in a car, along the roads that Hitler will build for us. The road there still runs along a narrow coastal strip, flanked by hills and mountains. Sometimes just beside the water; dead clear as it ripples over grey pebbles, pine trees near; sometimes flat land edged by tall rush. We first hitched up in an olive orchard. Magnificent cover, where Jerry couldn't see us, but he came along, systematically, each bomber

going another half-mile along the coast-wise strip. Rather dull. We, being in the path of their passage, had to lie down and take cover every ten minutes, when we would have liked to do something or nothing, or sleep. I tired of this business and laid a blanket in a shallow trench, where I could watch him and write up my diary, which had got behindhand. Quite difficult remembering what happened one or two days ago. A lucky bomb hit one of our ammunition lorries that caught fire and the shells started popping off 150 yards away. Not really disturbing, but each shell made an embarrassing puff of black smoke that a Jerry-bomber lolled down to see and circle. However, he must have been bored, or forgotten to mention it, for we didn't receive any particular attention. No one hurt, so I went for a swim in a stream that coursed down a fissure in the mountain face. Found the water chilly, but sat in the sun and contemplated the figs and oleanders growing wild. And some white faces that thought the ravine a quiet spot. One deafish lad had been by the lorry when it was hit, and as he couldn't hear the swish of the bomb, hadn't had any preliminary notice and had taken a good fright. His face was in the leaves and his hands held by two over-sympathetic friends. I went and talked to him and he cheered up

Ministry of Information



and was well enough later on. Fortunately, I am all right myself, and get furious with planes and wish I had a decent gun to blow off at them.

We then moved forward from our olive grove one afternoon. The rest of my group were happily in the sylvan setting of a plane wood, where the sun flecked through the leaves and a homeless pig, adopted by the Sergeant-Major, wandered about very happy, though we had designs on him. He didn't like air raids, which made him miserable and he would lie down on his side and moan, and not be comforted by biscuits nor scratching. My group were a bit thick here, so I went off towards a farm house without any cover, but

chose a field corner to dig my hole (12 x 14 feet) and put up my tent by 1.30 A.M. There the tent gleamed bright in the starlight, so we started camouflage. Taking old sticks and dead grass, the main branch of a holm oak. Not without difficulty, for it was one of those mulish branches that jams the saw, and falling, falls on a lower branch, that one has to swarm and push and kick at one's possessed obstinate branch. Finally it's down and by 2.30 prised against the end of the tent. The result must have been goodish for we received no attention, while they were bombing, dive-bombing and machine-gunning all around, with, what's more, any old darned plane they had. Finally ending up with some old bi-



Paul Popper

planes that manœuvred like kites, and one could almost imagine the man dropping the bomb over the side of this Bleriot contraption. Insults not planes. They waltzed about and didn't seem put-out at our machine-gun fire. Their darned planes are everywhere. Sitting out on the fields; up with their troops, so that our guns could range on them.' On three occasions, we had a troop of guns dosed up good and proper. Dive-bombers coming over, for what seemed half an hour, one after another. At the end, we couldn't see guns or even trees, for the dust kicked up. End result, not one casualty, every gun working.

My farm house was decrepit and mean and made one ache with its sweetness. An aque-

duct on wooden stilts led into the mill house, and below, the stream flattened out to a shallow rill lined by poplars, and ideal for the white ducks to puddle. Cherry, pear and quince in blossom.

For two days all was quiet, until one wondered what devilry the old Hun was up to, and looked at the island across the way (Euboea) and wondered if he was back along it and behind us: whether he would pop up out of the mountains, float down on parachutes, or use flat-bottomed boats at night. Then we heard that we were evacuating. Not a very pleasant dose to swallow, but I suppose times have changed since the other Thermopylae and merchant ships are fairly easy game



Audrey Hope Elvin

(Opposite) Athens, in that clear, pearly light which is peculiar to Greece. The Athenians crowded round the departing British troops at the end of the Greek Campaign, clapping and applauding with a generosity that left no room for any thought of their own plight. "You have done your best to save us," they cried. "We are finished, but the war is not lost: save what you can of your army to help it to win elsewhere." (Above) On the shores of Euboea: one of the Greek caiques in which the departing British troops were taken from the beaches to the troopships



Dorien Leigh

The heath about fifteen miles north-west of Athens, in which a British Division, in the last stages of the retreat, took cover after driving all night from Thermopylae. Later, unit by unit, they crossed Athens to go to hides near the beaches—the author's unit went to Marathon

for bombers and Athens difficult to victual. Perhaps our hosts didn't want us to continue the fight on their rather precious doorstep.

Then it became rather a game; when we knew that a whistle would blow and we would skittle down the road, like 'playing out time'. But now we needn't husband the ammunition, but fire the whole merry lot, before drawing stumps. We did.

Things seemed going along very nicely until teatime, with plenty of wickets to fall, when our forward post said that he was withdrawing, as the German infantry had come through ours and were coming up on his left. We telephoned the other post, who couldn't see against the low sun; then reported the matter to higher command, who said it was a mare's nest and that everything was in hand; but the next moment telephoned us back, very excited asking for further information, but by this time our telephone to the first post had gone dead and was silent for four hours. We peered into the hills, but they showed no advancing hordes; later we learnt that our infantry had let them come through, closed in and got a nice bag of prisoners, but this we didn't know then. One doesn't see very much of the whole picture from one position, but machine gunners talk of a picnic and anti-tank gunners of ump-



From the Author

The Greek Army's sole transport consisted of horse-drawn carts—seen here passing a British column. The road is newly built. The whole of a village would often turn out to make a road in order that the mechanized British forces might pass

teen blown up and burnt. I think that we bloodied their noses well enough before going along the coast road; where the sappers were ready with their gelignite.

Earlier we had been whipped over to Trikala, where we understood that the Greeks' left flank was crumbly. Not much satisfaction here; we camped under an enormous pinnacle of sheer rock; a most remarkable place. I took great pains with my tent camouflage, hoping that we would be in position long enough for the growing creepers to swathe it. No luck though. We had had a dosing from planes on our way, but had reports of their being shot down by Hurries. In fact one of their pilots had been taken by our own men and was most emphatic in a stammered statement that he had never been over London; a fact that was of interest to us Londoners. They didn't give him cigarettes

either; the way they had with Italians. Here, I didn't see any of our planes, but plenty of their bombing the poor pointless town next door, and then fighting round like so many swifts round a church tower, machine-gunning the roads and countryside.

I wandered round the batteries and found them in vineyards and about old disused monasteries. Had my sick parades under low spreading plane trees. Wild roses out and Judas tree and anemones in bloom. Wished I could have transported some home. Scarlet anemone *Alpina* that I have always coveted. Others mauve and grey, not so gross and full in shape and colour as our cultivated plants. *Cistus Alba* and *Purpurea*, that I paid 3s. 6d. a plant for in England and had them all winter-killed in 1939. Remember them in pots?

All quiet, but on one of these visits I came



Ministry of Information

British troops on the beach waiting to be evacuated. This was not a common scene in the retreat as only a few of the British were taken off in daylight; the majority embarked at night

up with a battery who had had the order "prepare to move", so back with olive orchards throwing out tanks and trucks, along roads almost impassable with mud. The mud would clog up under a motor cycle wheel, and to get along, the mudguard would have to be removed. Found my tent and truck packed and so along the road, and once more over the shallow ford under the cliff face to a few miles back, where there is time to hot up some food and make tea and talk to friendly shepherds, who showed me their war scars, won against the Turks and Italians. We exchanged tobacco and friendliness, though we were leaving them to people they truly hate.

Finally off and through pathetic Kalabakka with bomb craters down the main street, shops dishevelled and café chairs and tables strewn. The poor Greek army marching in single file

and small but endless groups. Some still had rifles and horses. Some walking in their bare feet and carrying their constraining boots. "To reassemble at Larissa", but of that there was no hope, the speed of mechanized people would see to that, though they march day and night. We drove on, passed supply points hurriedly ransacked, trucks stopped and thrown off the road, telephone wires drooping, broken to a mile from a bomb crater. Funny thing. Dark and we go on in an endless column until we get to a bridge that has been blown precipitately with a brigade waiting to cross. Scouts out to find a detour; four return reporting failure, but the fifth leads us over a moor and track that turns into a greasy, skiddy avenue of mud, with our passage. The two vehicles ahead of me are in the ditch, and I pull them out and lead on a column of six.

Where the hell are the rest? I stop every half-hour, and find that there is a vehicle less. Eventually we strike the road and bowl along and pick up the main column, and even find later that every truck and gun had come along. Through Larissa which, when we first met it, had been earthquake, desolate and evacuated, but now has been dosed from the air, and looks creepier by night and a good place to leave. Good going again and the morning sun finds us looking down on Pharsala, a valley, bridge and river that we are to watch for eight hours, for over come thirty planes and twelve circle and the leader tips over a wing and screams down to a vertical dive; appears to be standing on his head, drops his bomb on the bridge approach and along follow the other eleven, going through the same bit of air, dropping bombs in the same hole, and up goes a column of smoke hundreds of feet high. A remarkable spectacle. The others go back dosing the road. The road clear I potter back two miles along the road . . . not one casualty, after all that fuss and bother. Sappers bustle along the road and start repairing; tell us when it will be ready, but they are wrong because Jerry comes along and does it again. Finally we do whistle over and I wait to see the rest through (all well). Waiting, I hear that the Colonel is hurt, and with my Red Cross flag flying get ahead through the column. Poor fellow. But at least he finished looking decent. It seemed to make it better. But we have lost our best soldier. He had a good hard clear mind that served us well.

On through Lamia. Nothing now to inspire a poem, but a good exhibition of 'total war'. There seemed no point to it, but they had bombed and fired its rather pathetic plaster houses. No sense to it. It didn't hold us up or incommode us, but no doubt completed the theory of 'total war'.

Two Aussies have had the time to get a drink, ditch their truck and are calling tipsily for help. On to finish a late night and wake to the impertinence of fighters rattling overhead with machine guns firing. More an insult than otherwise, one thinks, as one blinks in the morning light; wonders where the food is; it isn't worth trying to go to sleep again; the truck is lying gently on its side from a little matter of the moonlight tricking one into thinking that a ditch was the track. Well, it's easily righted.

Sad, this retreat. We felt that we were failing a very gallant people. We remembered how they had greeted us on our march up, and the flowers thrown in the road; the

bay and thyme decorating our trucks. If one wanted a drink in a little poor village, up popped some man who refused to let one pay. You nosed into a shop for matches, and there were some soldiers and it was impossible to escape having a drink at three in the afternoon, though I hate drinking then, and feel sleepy and heady for the rest of the day. They had their tails well up when we arrived. They had done so well against the Italian, catching tanks with blankets. If anything happened "the Yugoslavs were going to sweep forward on the left. The Turks on the right, and they were going to be here, and we in support of them." We looked at the position. It was magnificent and anyone who came up that path was going to be given merry hell. But we said, what about that valley? Oh that's all right. And it was down that valley they came. We had a nice party with them, our first shot in their tanks, so we gave them eighteen more, just for luck; good visibility and we hit at them, chasing them over the landscape; but then the weather turned and we couldn't see. It rained, it froze, it snowed and the snow lay on the ground and finally things got too hot and we had to leave and hit the trail. Sad; it was a big jump, and the Greek had no chance of keeping up with us and getting back to his next line of defences. We thought of the soldiers we had had to dinner on bully, and the speeches of friendship when we were assured that we would always fight shoulder to shoulder and of men fighting again in exactly the same position as they had fought in twenty years ago. Well, well. This is a lot about war, but what one remembers more is the most charming country that one has ever seen. It really is delightful. Big mountains like Olympus and the sunset glow on the snow. Valleys with rich red earth and countless fruit trees in blossom. Shepherds and flocks.

* * *

Egypt. Apologies for this lugubrious letter, but the truth is, that as you know, I am a slow typer with my single-finger method, so that by the end of this it was two o'clock and I was just tired. Also, I got annoyed with myself describing such stuff, particularly to people near London. In fact, the show was 'good fun'—truly. One doesn't have the normal fret and fuss of usual existence. And to our particular party, a smooth departure to a boat that displayed white napery and stewards, even at 2 A.M.

Lordy, Lordy, Lordy: May, and I'm not in England.

English Villages in Rhyme

by J. E. LLOYD

The traditional rhymes associated with particular English Villages and handed down from one generation to another by word of mouth have, in recent decades, been in danger of dying out. Mr Lloyd is making a collection of them from which he hopes to compile and publish an anthology. In this article he gives some of the results of his quest

SINCE the establishment of Folk-lore Societies a great deal of interesting information about old English customs, games, songs, nursery-rhymes, maxims and proverbs, has been collected and published. Yet comparatively little attention has been paid to the traditional rhymes, couplets or doggerel in which the rustic, in days gone by, summed up the merits of his own or adjacent villages.

I have been collecting and examining such rhymes, and I find that numbers of them contain uncomplimentary references.

The countryman has never been as articulate as the townsman, but what he has had to say has usually been abrupt and to the point. In conversation with the older frequenters of a village 'pub' I have sometimes heard such adjectives applied to adjacent villages as 'dirty', 'drunken', 'mean', 'proud', or even 'lousy'—terms that I find recurring repeatedly in rhymes culled from practically every county in England.

The predominance of rhymes which jibed or ridiculed certain villages can be understood when it is remembered that in remote and isolated parts of the country the villagers up to fifty years ago knew very little about neighbouring villages. The general attitude was one of narrow patriotism for their own village and decidedly hostile towards the 'furriners' on the far side of the hill or valley.

It is well known that the lack of cordial relationship between one village and another developed into free fights at annual feasts or fairs, but animosity was also expressed through the medium of couplets, jingles or doggerel, which insulted more subtly than stick and stone.

A metrical blow at three villages in Yorkshire goes like this:

Halton, Rudby, Entrepren,
Far more rogues than honest men.

Couplets of this kind are still recited, though naturally one does not find them printed in local 'guides'. But many villagers 'have been brought up' on the rhymes, as

some express it, and a certain amount of glee can be detected in the way such doggerel is chanted.

In collecting and compiling an anthology, my first task was to distinguish and separate the rhymes from the mass of material generally classified as Folk-lore, Songs, Steeple Chimes, etc. This, of course, meant that an immense amount of printed matter had to be examined and searched, which sometimes yielded nothing. For, as I have already said, the uncomplimentary rhymes would probably never be printed.

As a collector, therefore, I had to rely upon the memory of 'the oldest inhabitants'. This is not always accurate, and a number of variants of a rhyme about the same village is encountered.

The sifting and arranging of the material proved interesting, and it was not long before I decided that the rhymes could be divided into eight groups or categories:

1. The simple couplet.
2. Rhymes boasting of the greater antiquity of one village over another.
3. Rhymes in the nature of a prophecy or weather proverb.
4. Alliterative doggerel of three lines or more.
5. The 'catch' rhyme.
6. Rhymes referring to some past event in the history of the village.
7. Rhymes mentioning the church, spire, bells, steeple.
8. Miscellaneous.

* * *

Traditional couplets about English villages, which I have arranged in my first group, are of two kinds. Those which simply link villages together, and those which are unkind or uncomplimentary. A very well-known example of the way villages are linked together comes from Norfolk:

Gimingham, Trimmingham, Knapton and Trunch,
Southrepps, Northrepps ^{are} hang } all in a bunch.
lie }





(Left) *Marsh Baldon*—one of the six Baldons mentioned in a rhyme—from a photograph taken 30 or 40 years ago. (Below) *A Cornish and (opposite) an Oxfordshire villager*

Several variations of this couplet can be heard which include other Norfolk villages of Gillingham, Mundesley and Paston.

From Oxfordshire I have recorded:

Marsh Baldon, Toot Baldon, Baldon on the Green.
Big Baldon, Little Baldon and Baldon in between.

From Buckingham one hears:

Here stand three Brickhills all in a row,
Great Brickhill, Little Brickhill and Brickhill of the Bow.

(Pronounced 'Brickle')

The following three examples of the uncomplimentary couplet come from Buckinghamshire, Berkshire and Lancashire:

Grendon Underwood,
The dirtiest town that ever stood.

(Buckinghamshire)

There's Brightwell and Sotwell and Merry Mackney,
But lousy old Cholsey is worse than all three.

(Berkshire)

Between two hills, so black and barren,
Lies dirty, smoky, little Darwen.

(Pronounced 'Darren')
(Lancashire)

Will F. Taylor



In my second group I have arranged rhymes or couplets in which a small village or hamlet boasts of much greater antiquity than a neighbouring town. It is difficult to find any foundation for such claims in many villages, nevertheless the following are all traditional:

Midford was Midford ere Morpeth was anc,
And Midford shall be Midford when Morpeth is gane.

(Mitford, Northumberland)

Cornwall and Devonshire provide the following:

Week St Mary was a town,
When Launceston was a furzy down.

Plympton was a Borough town,
When Plymouth was a furzy down.

From Norfolk I have culled:

Rising was a seaport town
When Lynn was but a marsh,
Now Lynn it is the seaport
And Rising fares the worse.

A correspondent in Worcester provides:

Kempsey was Kempsey when Worcester was a pup,
And Kempsey will still be Kempsey, when Worcester's busted up.

* * *

Rhymes in the nature of prophecy or weather proverbs which I have arranged in my third group, are not numerous but quite distinct and can be heard in many counties.

Buckingham provides an example reminiscent of Mother Shipton:

They who live and do abide
Shall see Bledlow church fall in the Lyde.

And they that live and do remain,
Shall see the church built up again.

Cornwall provides:

When with panniers astride
A pack-horse can ride
Through St Levan's stone,
The world will be done.

And in Cheshire one can hear:

Whenever Chester chimes at Congleton do sound,
A flood like Noah's will wash away the ground.

(As these places are thirty miles apart,
there does not appear to be much
danger of this happening.)

Observations which countryfolk had to make about the weather are easily understood and have settled down in the form of proverbs. Like many people of today, the weather was the first subject which they would find of interest to talk about. The nearest hill would indicate to the countryman whether the clouds were low and rain expected.

A Cornish weather proverb which refers to a hill about five miles north of Liskeard goes like this:

When Caradon's capped and St Clear hooded,
Liskeard town will soon be flooded.

A Sussex version:

When Beddingham hills wear a cap
Ripe and Chalvington gets a drap.

When there was no nearby hill to gauge the weather, the church spire was used as an indicator and therefore formed the subject of the proverb.

A proverb in Leicester, however, refers to Belvoir Hole (seven miles from Grantham):

When mist doth rise from Belvoir Hole,
O, then be sure the weather's foul.

* * * *

In my fourth group I have included a miscellaneous collection of doggerel of three lines or more, which link clusters of villages together by rhyme and alliteration. This group is by far the largest, and the following are excellent examples:

Aynho on the hill,	[Northants]
Clifton in the clay,	[Oxon]
Drunken Deddington,	["]
And Hempton Highway.	["]

A traditional rhyme about villages on the fringe of the Cotswolds can be found recorded in several guide-books:

Hayley, Crawley, Curbridge and Coggs,
Witney spinners and Ducklington dogs.
Finstock on the hill, Fawler downderry,
Beggarylly Ramsden and lousy Charlbury,
Woodstock for bacon and Bladon for beef,
Handborough for a scurvy knave and Combe for a thief.

Several villages in the neighbourhood of Stratford-on-Avon have obtained vague immortality through being included in a rhyme which has, entirely without foundation, been ascribed to Shakespeare:

Piping Pebworth, Dancing Marston,
Haunted Hillboro, Hungry Grafton,
Drudging Exhall, Papist Wixford,
Beggarylly Broom and Drunken Bidford.

Warwickshire provides the following:

Idlicote on the hill, Whatcote downderry,
Beggarylly Oxhill and lousy Fulready,
Yawning Yitington, peeping Pillarton
And one-eyed Marston.

* * *

The catch rhymes included in my fifth group are few in number compared to the others, but interesting. They are usually chanted quickly so as to trap the unwary listener. A Shropshire rhyme of this kind runs thus:

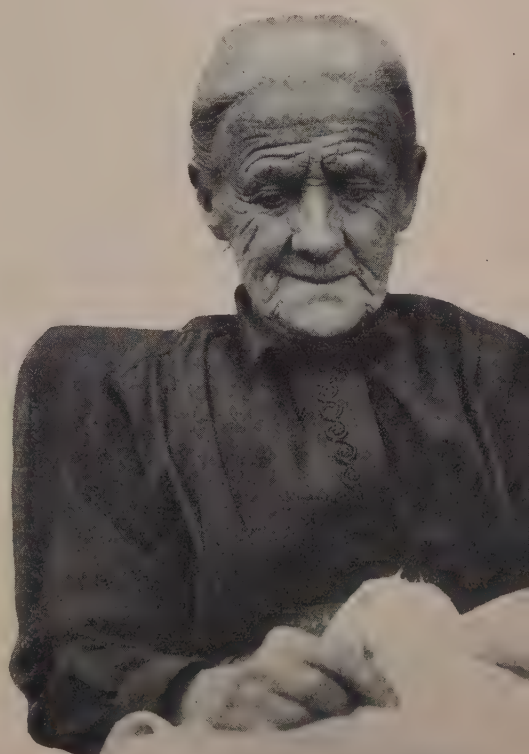
Ellesmere, Oswestry, Whitchurch and Wem,
In four letters spell me them.

East Yorks:

Hornsea, Atwick,
Bewholme Catwick,
All begin[s] with A.

Derbyshire:

Heage and Ripley,
Crich and Fritchley,
All begin[s] with A.



Sussex:

Heighton, Denton and Tarring
All begin[s] with A.

A more involved type of catch rhyme is to be heard about Stow on the Wold in Gloucestershire:

Stow on the Wold,
Where the wind blows cold
And the old woman can't cook pudden',
Take old from the Wold
And Wold from the Old
And spell it in two letters.

(Needless to say the play is on the words *them, all and it.*)

* * *

My sixth group of rhymes can be distinguished because they refer to some past event in the history of the village. Some of the rhymes are amusing, others obscure, while many serve to ridicule.

Good examples come from Cornwall, where in years gone by many parishes were noted for the generosity of their feasts. Owing to poverty, some found it hard to make any show of a feast at all, and it is recorded that on one occasion the poor folk of St Denis were compelled to entertain their guests with sloe pie. For years afterwards this story was told against them, and the mere mention of sloes and the screwing up of one's mouth was regarded as the deadliest of insults.

Poverty was the cause of the failure of a feast at Stithians which is now best remembered by the lampoon of some ungrateful guest:

Sti'ans bugs, leathern jugs,
Sour milk and whey,
Maggots boilin' in the crock
Sti'ans feasten day.

There was no reason why the Stithians people should take this to heart as other parishes have been known to be condemned by the same rhyme. "St Just bugs",—for example.

Another rhyme from Cornwall is more amusing:

Ye men of Porthilly
Why were you so silly?
In having so little power
You sold every bell
As Gouan men do tell
For money to pull down your tower.

An old rhyme about villages in Hertfordshire and Buckinghamshire suggested to Sir Walter Scott the title of his novel *Ivanhoe*:

Tring, Wing and Ivinghoe,
Hampden of Hampden did forgoe
For striking of the prince a blow,
And glad he might escape it so.

According to tradition the three manors mentioned were forfeited by an ancestor of John Hampden for striking the Black Prince a blow with his racket during a game of tennis. There is not, however, any evidence to show that the manors were ever in the possession of the Hampden family.

A rhyme of apparently more recent date refers to some incident, which at the moment I am unable to trace:

Weekly Warkton, beautiful Barton,
Ptychley made a pie,
Kettering came and ate it up
And made poor Ptychley cry.

* * *

The church was of course in many respects the centre of village life, and naturally forms the subject of many traditional rhymes. The bells, the tower and the parson also provide very suitable subjects for jibing and jeering.

The respective merits of church spires is given in the following rhyme from North Oxfordshire:

Bloxham for length,
Adderbury for strength,
And } King's Sutton for beauty.
But }

A similar rhyme treats the churches of Bishop's Nympton, North Molton and Chittlehampton (Devonshire) in the same way.

An amusing rhyme about the church of East Ilsley in Berkshire runs:

Sleepy Ilsley, drunken people,
Got a church without a steeple,
And what is more to their disgrace,
They've got a clock without a face.

Shropshire will not be outdone:

A new church, an old steeple,
A drunken parson and a wicked people.
Amen,
Says the clerk of Wem.

Children in Oxfordshire still chant the following:

If Kiddlington spire
Were ten times higher,
I would take off my shoe
And jump over it.

* * *

In my final group I have gathered together a miscellaneous collection of village rhymes



H. W. Taunt



F. Packer



F. Packer

Steeple: (from left to right) *Bloxham for length; Adderbury for strength; King's Sutton for beauty*

Westmoreland (Troutbeck):

There's three hundred brigs i' Trout
Three hundred bulls,
Three hundred constables
And many hundred feuls.

Sussex:

On Hydon's top there is a cup,
And in that cup there is a drop,
Take up the cup and drink the drop,
And place the cup on Hydon's top.

* * *

The rhymes I have quoted are of course not all of equal antiquity, but like genuine folk-songs it is impossible to prove their age.

There is no doubt that many contain a nucleus of historical fact but have suffered distortion through being handed down by oral tradition. It will be seen that some of the ideas expressed are the product of simple psychological reactions to environment. Though the origin of a large number may be lost in antiquity, some are comparatively recent, and obviously derived from recorded events of the last two or three hundred years.

Present-day conditions make it difficult to carry on research work of this nature, but with the aid of correspondents from all over the country I have been able to collect some hundreds of traditional rhymes about English villages, which I hope, when published, will prove to be entertaining as well as of historic interest.

which at the moment I am unable to separate into any particular group. For an instance, what gave rise to the following?—

I went to Noke	[Oxon]
But nobody spoke,	
I went to Thame	[Oxon]
It was just the same.	
I went to Brill,	[Bucks]
They were silent still,	
I went to Beckley	[Oxon]
They spoke directly.	

Lancashire:

Huyton, Huyton,
Two dogs fightun'
One's a black and
One's a white 'un.

(Huyton, a small village adjoining Liver-
pool ; pronounced Hi-ton)

Norfolk:

The county Gruffs Hob, Dick and Hick,
With clubs and clouted shoon,
Shall fill up Dussingdale with blood
Of slaughtered bodies soon.



English Inn Signs

by F. R. Winstone

The main purpose of the inn sign is to arrest the attention of travellers and to remind 'regulars' that they have arrived at their favourite inn. So the sign must be individual, either in subject, or design and construction. After the last war there was a revival of sign-writing and many spirited signs—of which a few representative examples are shown here—appeared in main roads and country lanes. The sign of the 'Butcher's Arms' at Carhampton, Somerset, makes an unpromising subject amusing and decorative. The 'Carpenter's Arms', near Burford, Oxfordshire, effectively combines a simple central design with curling metal work. The all wood 'Hopcroft's Holt' challenges notice on the Banbury-Oxford road (a 'holt' is the hiding-place in which highwaymen awaited their victims). The 'Olde Black Bear' calls attention to a 14th-century inn at Tewkesbury, Gloucester; while 'Nautical William' hails people on the road north of Kidderminster, Shrewsbury. The 'Tally Ho', a good modern cut-out sign in metal, is in the Old Town, Eastbourne, Sussex.





John H. Stone

The old inn at Elmley Castle, Worcestershire, bears a sign showing on one side a portrait of Queen Elizabeth, on the other her arrival at the village on August 20, 1575. The earliest inn sign, dating from the time when every trade had its own particular symbol, was a garland or bush on the end of a pole. From this came the proverb "Good wine needs no bush".

Painted Churches in Bucovina

Voroneț and Sucevița

by M. NANDRIȘ

"In the forlorn valleys of Bucovina are treasures of art not found elsewhere in the world. On the exterior walls of the churches in Sucevița and Voroneț . . . you see ikons of the Orthodox Church which charm your eye and conquer your soul. . . . The vivid colours give you the impression of a Persian carpet"—so wrote Mr I. Strykowski, former professor of the history of art at the University of Vienna. The earliest fresco work in Rumania dates from the 14th century and was by Greek artists of the Macedonian school. The frescoes at Voroneț are derived mainly from the art of Byzantium but also show the assimilation of Moldavian peasant art and have not been surpassed even at Mistra or Mount Athos where the chief monuments of Byzantine fresco art are to be seen

OF the thirteen painted monastery churches in the Bucovina forests of Rumania, Voroneț is perhaps the best known and the most perfect, both in paintings and architecture. Though the monks' cells have long since been demolished, it is still used as the parish church.

Frescoes representing scenes from the Old and New Testaments, as well as the history and ritual of the Orthodox Church, were painted on the walls of this church for the benefit of those who could not read the Bible.

The first thing which struck me about these Byzantine paintings, which have withstood the winds and rains of nearly 500 years, is their spiritual character. The cult of bodily beauty, which is characteristic of western art, is replaced here by the spiritual beauty of the figures displayed on the walls. They seem to look down from another world, beyond this earthly life.

I was particularly attracted to *The Last Judgment* in which God is depicted on the last day, calling all men to Him for judgment; some can be seen going to a bright heaven; others are thrown down to the fires of hell, where black devils with horns and tails are waiting to torture them in eternal fire. The Archangel sounds the trumpet, the graves open and all men can be seen rushing towards God. Wild beasts cough up the hands and heads of men, meaning that those who have been devoured by wild beasts will also rise from the grave. Men who were drowned rise from the depths of the sea, where all kinds of creatures are depicted, including trout, which the artist had probably seen in the stream by the church. The heaven is made very bright, with different kinds of exotic trees growing against a white background.

Most of these monasteries were built in

secluded valleys on the edge of a forest. History says they were built there to be safe from the invading tribes who constantly ravaged the countryside.

The legend preserved in local tradition explains the origin of Voroneț in this way: Stephen the Great (1457-1504), Prince of Moldavia—which included the province now called Bucovina—had had an unsuccessful battle with the heathen Turks at Razboieni. The Prince was wounded and retreated towards the forest on the foothills of the mountains near the fortress of Neamț. His mother, however, forbade him, even on such a stormy night, to enter the castle a beaten man. She ordered him back to the battlefield to defend his country and his faith.

Stephen, in his search for more soldiers to strengthen his army, arrived one day at the



Stanford, London

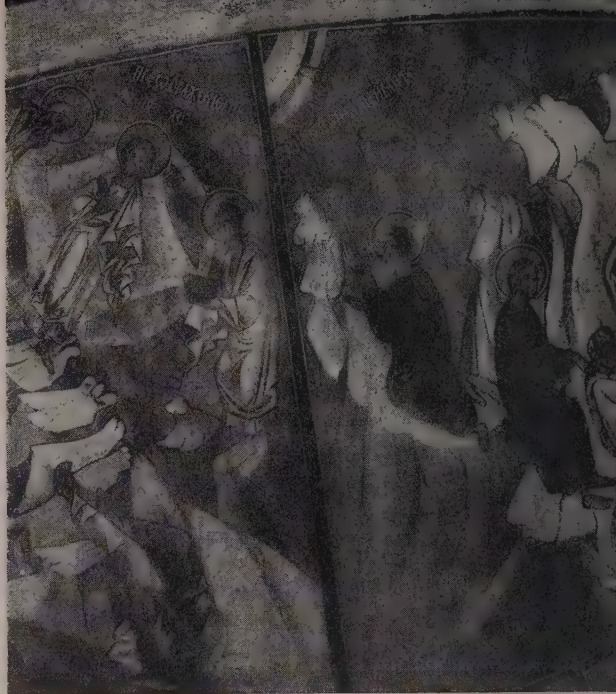
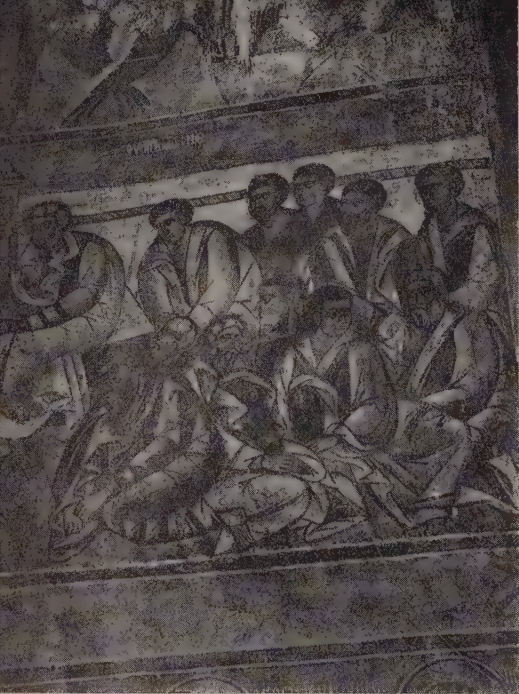


Photographs from the Author



(Above) Church of Voroneț from the east, with the round apses covered with frescoes which have resisted the weather of five centuries. The Carpathian forests in the background form a natural frame for this sanctuary of legendary beauty. (Left) The western wall of Voroneț is supported by two buttresses which allow extra space for the fresco of the Last Judgment, a masterpiece of Byzantine art. The tradition of this composition reaches back to the 8th century. (Opposite) The entrance door of the vestibule (pridvor) of Voroneț. The Gothic window (as well as the supporting buttress) show the influence of western architecture superimposed on the Moldavian-Bucovinan style. On the left are portraits of the hermit Daniel and of the Moldavian Metropolitan, Gregory; next to them are St George, the Patron of Moldavia, killing the dragon. Other scenes are of the Martyrdom of St John, Patron Saint of Bucovina. Over the entrance is the Deisis, i.e. Christ on the Throne with the Virgin Mary to His right and St John the Baptist to His left





I. D. Stănescu

Details from Voroneț: the Washing of the Feet, the Transfiguration and Gethsemane. In technique and colour, these primitive pictures are reminiscent of Giotto and Cimabue

spot on which the monastery of Voroneț now stands. Here he came across a hermit, Daniel, who lived in a cell, and asked permission to enter. The hermit made him wait outside until he had finished his prayers. Stephen asked the old man if he ought to let the Turks take his country or continue to fight. Daniel, the hermit, replied that he would win the battle if, in gratitude, he would build a monastery there and dedicate it to St George, the patron saint of Moldavia.

Stephen conquered the Turks and drove them to the Danube and duly built this monastery to show his thanks to God.

A Cyrillic inscription engraved on a stone slab above the door of the *pronaos* (back part of the church where the women stand) gives the year in which the church was built (1488), and old parchment manuscripts found inside the church show that the monastery of Voroneț was a centre of culture in Moldavia.

Entering by a narrow door, I found it difficult at first to see anything after the glare of the sunlight. The walls are completely covered with frescoes, in wonderful colours, mellowed and made harmonious by the passing of centuries. Each day of the year has a saint, or commemorates some event in the Orthodox calendar: each day is painted on the walls in chronological order, forming

a calendar in pictures.

In the next room—the *naos* (front part of the church where the men stand)—separated from the altar by a wall of ikons, the smoke from thousands of candles has partly covered many of the interior frescoes, but still the austere faces of saints can be distinguished.

A ray of sunlight came through the narrow window in the tower and fell on the marble slabs of the tombs. Byzantine churches have very small windows and an undisturbed religious darkness within. A picture of Christ—famous for its original Byzantine character: large black eyes, thick hair and beard—looks down from the dome of the *naos*, with a severe countenance, on His flock.

A new work of art revealed itself to me in every corner of the interior of the church. I found it hard to leave them, but the thought of the sunlight shining on the outside frescoes drew me out of doors. On the outside walls, against a dark-green background, rows of prophets, saints and church fathers are depicted in hieratic order, from the ground up to the roof, each occupying a position well fixed in tradition. In the bottom row stand the figures with the lowest rank, and so in order of merit up to the Archangels and Cherubims. Plato, Aristotle, Homer and Sophocles have their place in this gallery too.



The monastery of Sucevița, sanctuary and fortress, in the foothills of the mountains

When one looks at the monastery from a distance, it appears like a miniature on parchment. In fact the origins of Byzantine paintings were miniatures, which have developed in mosaics and frescoes.

* * *

I came to the monastery of Sucevița towards evening after a day of climbs and descents, since I had decided to make my way on foot over the mountains from Moldovița.

The path lay through stony valleys, with clear streams; through deep shade where bird-song was the only sound; by high peaks where long blue views opened out.

"Is it far to Sucevița?" I asked a mountain woman, whom I overtook.

"It's not far. Look there! A short hour's walk and you get to Sucevița," replied the old woman without stopping her work. When we got to the top of a hill, from which a stream could be seen in the valley below, the old woman showed me the path.

But the mountain woman's 'short hour' lasted nearly half a day! The sun had gone down behind the mountain-tops, when I saw tall white buildings appear at the foot of the wooded hillside: the monastery at last! The cells are built round a square courtyard, with towers at the four corners, resembling a

fortress. The church is in the centre of the courtyard.

Small openings, like little look-out windows, could be seen in the walls. Further on, the village stretched out in the broad Sucevița valley, with white houses, each surrounded by a garden. The long silhouette of the church, with a single tower towards the eastern end, rose above white walls.

The entrance to the monastery lies under a square tower. Facing the entrance, the painted walls of the monastery—now the church—rise from the centre of the square, grassy courtyard. Gold, red, white and green paintings on a dark-blue background combine in fantastic colour-schemes, giving the impression that an enormous oriental rug envelops the building almost from the ground to the roof.

Here, as at Voroneț, the colours have held out against the weather of centuries.

Sucevița is the largest of Bucovina's painted monasteries. A century of artistic experience passed between the paintings of Voroneț and those of Sucevița. Voroneț is at the beginning and Sucevița at the end of the evolution of Byzantine painting in Bucovina.

While I was looking at the Ladder of Virtues which covers the entire north wall of



ІАТМЕСЪНИ, ПОИШАСТА Е, Ю
 СТАГО ЖЕ УСАТЪМЪЫПОВЪСЕНДЕМЛИ
 ІАДЕВАТАГО . ОДЕВАТЪМЖЕ УСА
 ЗЪПНІСТАМСОВЕЛІЕМЪ, ГЛА . НІА
 АН . ЛІАМЕСВАХЪАНИ . ЄЖЕЄБЕ
 ЮПЪЕМОИ, ВЪКЪАММЕСНОСТАВН
 Ъ . НЪЦІИЖЕСОТОУСТОЖІИІСЛЫШИ
 ШЕ, ГЛААХЪ . ІАУОНІАГЛАШІЕСЪ



I. D. Stăfănescu

(Opposite) Detail of embroidered covering from the tomb of Prince Simeon Movila at Sucevița. The skilful fingers of the princesses who worked it have immortalized the majesty of the face and the grace of the hands—in gold, silver and black on a deep blue background—and have succeeded in expressing eternal peace triumphant over death. (Above) A parchment page of a Gospel manuscript of 1607 at Sucevița, written in Church Slavonic with Cyrillic alphabet. The illuminations represent the Crucifixion



I. D. Ștefănescu

Three pictures in the cupola and on the vaults of the porticos in Sucevița. In the semi-circle of the cupola, a rose of chambers; below, a Holy Synod with the Byzantine Emperor Theodosius the Great on his throne; underneath, scenes of the monology, every quadrangle representing the point of the respective day. The calendar of the whole year is exposed in wonderful colours for the eye of the believer. (Opposite) Three scenes from Moses' life, on the walls of Sucevița



УЛОГНДЪА ЗНАЕ СКАЗУЮЩИ ИСКАУЮЩИ ИЛИ



УЛОГНДЪА ЗНАЕ СКАЗУЮЩИ ИЛИ





the outside of the church, an old monk with a patriarchal beard resembling those of the saints on the walls of the church came up to me. This was the priest of the church and the nuns' confessor; for Sucevița, which was originally a monastery, has been transformed into a nunnery, and every nunnery must have a priest to read the liturgy, because women are not allowed to do so.

The monk told me some of the history of the place: it was built by a family of Rumanian noblemen, the Movilas, at the end of the 16th century and painted shortly afterwards. In it is the crypt of the Movila family. Two members occupied the throne of Moldavia and one the throne of Muntenia or Walachia, the other Rumanian principality.

One member of this family, Petru Movila, became Metropolitan of Kiev and is known in the history of the Orthodox Church as the founder of the Theological Academy in Kiev and the Defender and Organizer of the Orthodox faith.

Entering the church by the *pridvor* or open vestibule I was struck by the harsh colours of the paintings. The monk told me that this inferior painting dates from the 18th century. The difference in the character of the painting in the *pridvor*—18th century—and in the other parts of the church is marked. There is also a remarkable difference in the paintings within or without the church itself. Tradition says that the master who began the paintings fell from some scaffolding and died, leaving the work to be finished by an inferior artist.

I found *The Last Judgment* in the same position as at Voronet, but inferior in proportions, in technique and colour. The interior, nevertheless, being larger, has more light and the frescoes are seen to better advantage than

in the smaller monasteries. The entire calendar with holy days, Orthodox saints and great events in the history of the Eastern church, are represented on the walls. Every step of the complicated Orthodox Liturgy is represented in colour and picture.

Outside on the south wall, the Greek philosophers and historians—Plato, Aristotle, Thucydides and Homer—are depicted among Old Testament figures.

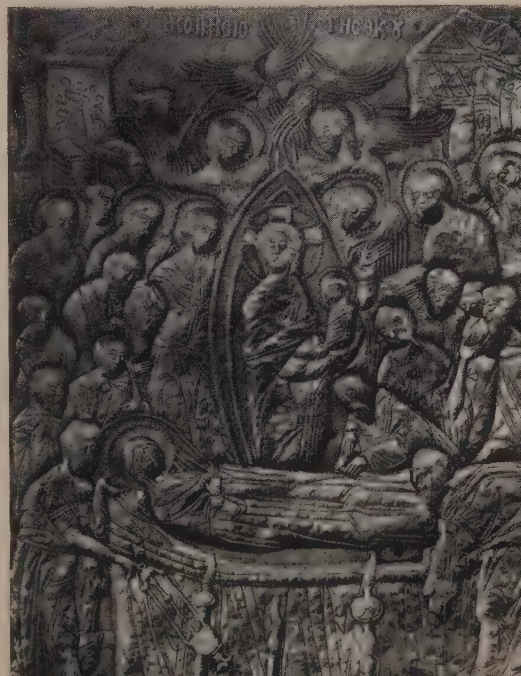
The priest found a ladder and climbed up to a candelabrum hanging from the cupola of the church. From this, several ostrich eggs were hanging in metal cups. The monk opened one of these and brought out a lock of auburn hair. Holding it up to allow the sun's rays, which came in through a narrow window, to fall on it, he told me its history in a low monotonous tone.

"The wife of Eremie Movila was a capable, ambitious woman. She could not bear to think that her sons might not succeed to their father's throne. In the fight for the throne, this beautiful woman fell into the hands of the Turks and was taken to a harem in Constantinople. She sent this lock of hair by one of her faithful nobles to this monastery founded by her husband, with the tragic news of her imprisonment."

In the spot between the naos and pronaos, destined for their crypt, lie the remains of other members of the Movila family.

The tombs, the saintly atmosphere over which the kindly face of Jesus, the Pantocrator, looks down from the cupola, the monk from another century—all made me feel I was no longer on this earth or of this age.

(Opposite, top) *The monastery church of Sucevița. Its frescoes, painted in 1582, have the precision of a Persian miniature.* (Bottom) *The Ladder of Virtues on the south wall of Sucevița. The angels above are watching the humans climbing the ladder. Every rung represents a virtue; and the sinner falls down when he tries to step on the rung whose virtue he disregarded. Below, the powers of Hell are waiting to torture the sinners, a pictorial version for the benefit of illiterates akin to Dante's Inferno. The three quadrangles above to the right represent the garden of Eden and its ethereal atmosphere.* (Right) *The Museum of the Monastery of Sucevița comprises a rich collection of old church art. This is a sculptured silver binding of a Bible*



An Almshouse of Craftsmanship

by H. J. MASSINGHAM

SOME years ago, when England had gone into the deepest eclipse of its chequered career, I built in my garden an Almshouse. It was for my collection of country industries, tools and implements of 'old-fashioned' self-sufficient agriculture and utensils of the equally self-sufficient kitchen, once the most import-

ant room in cottage, farmstead and even manor. In a book I once wrote, I gave an account not only of their uses on the land, in the workshop and in the chief chamber of the house, but of the design and economy of that discarded rural structure for the needs of which they were all integrated parts of one whole. But this retrospect was as premature as the monument for old bones I erected for them. It became too small to hold them. They continued to pour in and I had to build out an annexe to contain them. Since their last home was enclosed both within the walls of a garden hermitage and the covers of a book, it is fitting that this annexe too should receive its memorial notice. If it were at all complete it could easily be expanded into a book, so that I have here to be mercilessly selective.

Though I have spoken of these salvaged treasures of our former countryside and its works as though I were reading a memorial service over them, I have carefully refrained from speaking of 'exhibits' in a 'museum'. These terms are taboo because I do not regard my collection in that light—or rather twilight—at all. Their shelter is an almshouse, not a mortuary. The objects in my collection are passing through the winter of their discontent, but it is a deceptive as well as a superficial view which dismisses them as dead. The present phase of our civilization can only be a temporary one because it is not founded upon first principles: these relics were so. They all possess, that is to say, a rough but inevitable beauty proceeding from a utility which performed a service both to earth and man. This is an eternal value not subject to time, and if it arbitrarily becomes so, woe be to him from whom the offence cometh: in other words, the destroyer himself will pass into eclipse. The making of things of use and beauty are a fundamental part of human nature, as the upright posture and the opposable thumb physically distinguish man from the rest of the animal creation. It is inconceivable that the objects constructed by the interplay between fingers and this opposable thumb, from a cathedral to a watch-spring, can be more than temporarily superseded by the explosions in a cylinder. If man were to



Photographs by His Honour Judge E. T. Dale

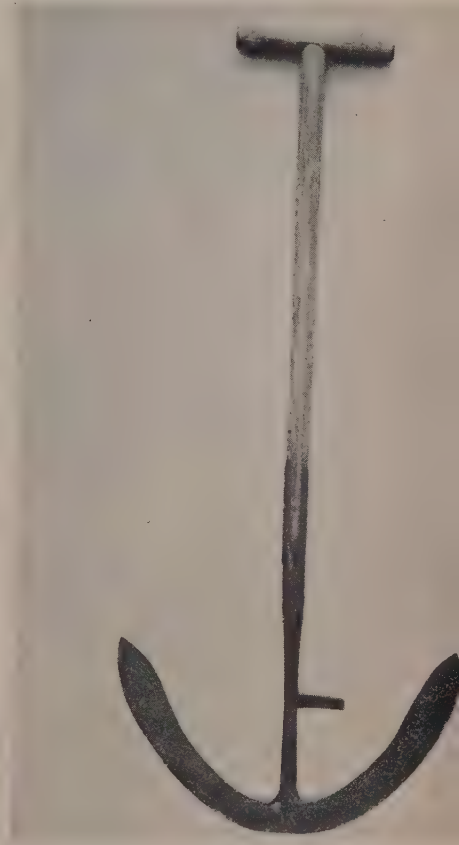
Two scrapers used for scraping out the burnt fuel from the bread-oven before inserting the loaves. Handles were long because of the great heat

fold his arms and look on while engines made everything for him, he would cease to be man.

The machine has a definite part to play in the constructive works of man, but it is a subordinate part. That part is exactly what its 18th- and 19th-century inventors said it was to be, the performance of drudgery, and drudgery means work in which man has no opportunity of expressing his qualitative sense. But these innocent inventors proved themselves entirely unable to foresee that the machine, unless controlled, would become the most potent instrument of self-interest the world has ever known, and thus create (so far as a machine can create anything) a drudgery of its own far worse than the basest hand labour. Thus a machine that gets rid of any tool or implement or craft whose results or operations are qualitative is not only producing

a worse for a better thing, but also making dreadful disturbance within man's nature which can only be at peace by the exercise of the qualitative element in his make-up.

That is why I no more believe that many of my 'bygones' are dead in the ultimate sense than that the moon leaves the heavens when her visage is obscured within a cloud. When man is restored to himself after his 20th-century frenzy, they will return, though not perhaps quite in the same form as they are now in my almshouse. And in fact I use many of them myself in the garden, not because it gives me a sentimental thrill to cut the umbilical cord of a vegetable marrow with a corn-sickle, but because it is the most useful implement for the purpose. The hedge-maul is admirable for pulverizing woody stems for the compost heap; the fagging



(Left) Shepherd's crooks, the tallest from Gloucestershire, the shortest from Wiltshire, the middle and finest from Sussex, examples of local differentiation once prevalent in all rural craftsmanship. (Right) Turf-cutter with wings of an unusual type. The projection was for the foot to press the blades down into the turf or peat



Two adzes—the smaller used for hollowing elm-seats of Windsor chairs, the larger for dressing barn timbers—a dock-lifter and a well-bucket lifter

hook and stick for cutting the oats and long grass; the baskets from Sedgemoor and the banks of the Thame and the Severn for a multiplicity of uses; three crooks, each with a differently shaped 'guide' and 'barrel' according to its county loyalty and the delicate obedience of county workmanship to a regional diversity primarily dictated by our variety of soils, are very handy for capturing the geese; in the old mortar from Christchurch Kitchen I crushed my grapes for wine, and with the cream-skimmer removed the 'scum' of the ferment; the sheep shears come in for edgings; the dock-lifter removes docks as of old and the turf-cutter with its curved wings cuts turf; butter-balancers can weigh other objects besides butter; and what for domestic enterprises can ever replace adze, chopping axe, beetle or paddle? When I get my cow, I shall be able to attach her to the beautiful little harrow (like the French peasants) that was once perhaps drawn behind a donkey. I frequently use the bird-clappers for keeping the blackbirds off my fruit.

Other 'exhibits', again, I have promoted

into my home where they have become part of the *vie intime* of their owner. The butter-stamp with the sheaves of corn carved upon it, the gravy-glass, the lead tobacco-jar, the tobacco-box, the wonderful box of spillikins made by a country parson a century ago, the framed specimens of straw-plait made by an old lady of ninety-one, have become as true and familiar a portion of the household as the chairs and stools and stands made for me by living local craftsmen. As many of these resuscitated by-gones as may be serve the double purpose of utility and ornament. This canon applies as much to the shapely elm-bowl made by George Lailey of Bucklebury Common in Berkshire, one of the very last of the bowl-turners, as to my great oaken bowl from the village of Shere in Surrey. Its maker belonged to that countless company of the unknown and the unknowable who may be said to have left to the modern age—which has done little enough to deserve it—one of the supreme heritages of beauty and fitness in the world's history.

Some forty inches in diameter, this bowl has a flattened rim and delicate mouldings on the outside, while time has stained it with a dark and mellow richness of colouring not unlike the fruity brown sherry that Fothergill of Thame used to dispense to the more favoured itinerants at his inn. These bowls are handy enough for holding the letter that needs answering but not at once. But they are best for fruit or walnuts which seem to lend a special quality to the graining and patina of the wood. My fine copper muller or hooter or shipton I have not yet found a use for, because the ale one gets nowadays is simply not worth mulling in the fire and the spices once added to it have become almost as fabulous as the apples of the Hesperides.

In a sense, the framed specimens of straw-plait defy the sentence of death passed by our age upon the country industry because, though they celebrate past uses, they still adorn the present as the substitute for a picture on the wall. Not so the hand-mill for flattening the straws used in this once prosperous and widely diffused cottage industry in which the women wove the straw and the men grew the corn for it. This hand-mill is extremely rare and was given me by a local cabinetmaker. It is a casing of oblong elm panels a foot in length and containing a pair of revolving 12-inch cylinders attached between the boards. These moulded drums are set in motion and contact with one another by a large handle, also moulded, set above the top board. This engine looks as old as a hand-quern but performs its office of flattening without breaking or tearing the straw



Hand or donkey harrow. It is quite possible that this was pulled by human labour, but if another implement was attached to the hooks at the end, it would be drawn by donkey or pony. A typical peasant harrow made by the local blacksmith

with ease and finesse. What is the use of it now? Not even the use of decoration since it is hardly an object for a mantelpiece. It can only recall our thoughts from too much complacency about the present age to the fact that an indispensable home industry that swelled the small incomes of tens of thousands of cottagers was struck dead by the modern economic system of international cut-throat competition.

I select for mention two other of my more recent bygones which were made for decorative purposes alone. One is a picture on the wall in a very handsome carved frame of alternate black and gold, probably late Regency in date. The subject is a trio of sheep standing and lying on the sward under a full-foliaged tree with a soft grey sky above it. The interesting thing about this picture is that it is a true picture without being one. It might be taken for a minor masterpiece of the great English school of rural water-colourists, the grouping and still animation of the sheep being particularly noticeable. Actually, the pleasant scene is literally built up on the sand, sand being the substance and architecture, the whole being then lightly painted over. No object among my multi-

farious bygones gives the beholder so graphic an impression of the one-time prodigality of English craftsmanship, which out of what appears mere dexterity and a material that would seem little more serviceable for its medium than water composed a wall-picture charming to live with for its own sake.

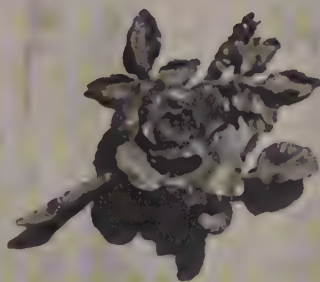
The other is the spray of a rose, with foliage, stem and half-opened; half-pendulous flower all in wrought iron. The petals and leaves are not only delicately veined, but each one has its edges crimped, folded and waved both naturalistically and with variations from its neighbour. It is a puzzle to me how a blacksmith's hammer which must first have beaten out the leaves flat could ever have made its iron behave with the exquisite touch of wind among a cluster of authentic leaves. This rose is, in fact, one of the most surprising and splendid pieces of smith's work I have seen, not excluding the wrought-iron gates of the 18th century. But the most remarkable thing of all about this specimen of sheer virtuosity is that it was made by a smith who is still living. This gives me far more satisfaction than if it had possessed the fictitious value of being a *chef d'œuvre* of the distant past. For then it would be prized merely as an antiquity



(Left) Muller, hooter or shipton of brass, for heating spiced ale or frumenty in the fire. Throughout the last century hardly an inn was without one.

(Right) Rose, in wrought iron, a piece of remarkable workmanship by a living blacksmith, leaves and petals are all veined. (Below, left) Straw-plaiting mill. The straw was inserted between the finely adjusted cylinders and flattened by turning the handle. The screw at the end was for adjusting the rollers. Note the mouldings.

(Right) Oak bowl from Shere in Surrey. This photograph gives an impression of the texture and mouldings of the wood



rescued from a dead tradition, whereas this smith has, in the face of such adversity as craftsmanship has never before encountered in all its long history, triumphantly vindicated the power of a tradition that still lives.

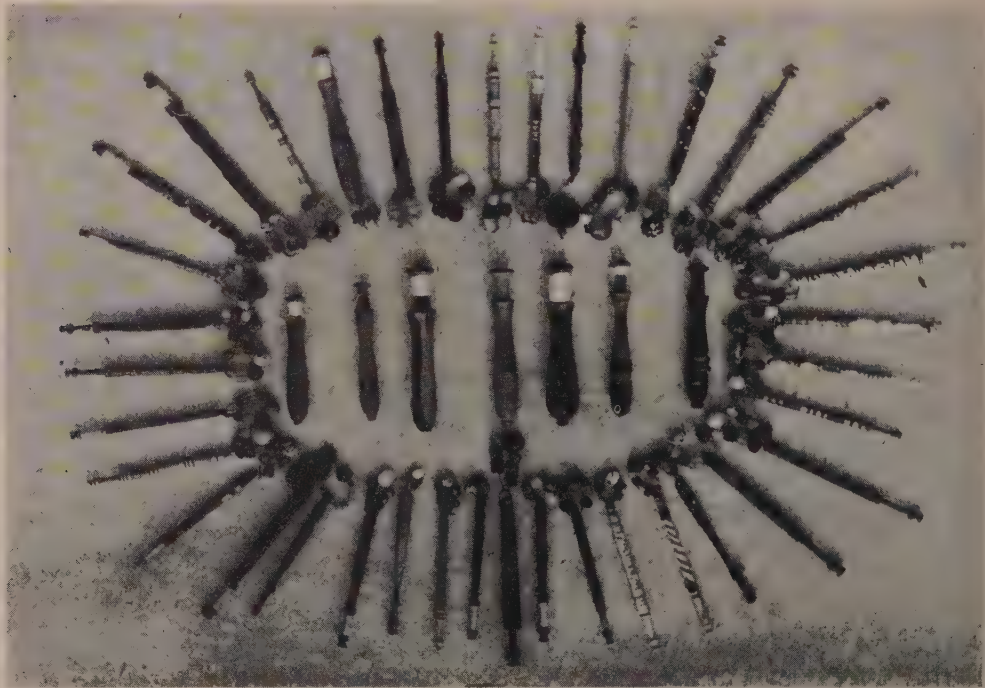
In thus setting these unemployed bygones to work in the garden, making them contribute both to the services and 'amenities' of domesticity and taking them into partnership with contemporary furniture in my home, furniture which is itself a survival of our great tradition in the applied arts, I consider that I have saved them, at any rate for my lifetime, from being museum specimens, like the tombs in a churchyard. For the theory of automatic progress must inevitably regard all craftsmanship as obsolete by the mere fact of it being left behind. Thus the past acquires a mere antiquarian value, and the real panegyrist of the past is the progressive. This is plainly the reason why the modern age is stuffed with museums; the essence of a museum is that it is a container for things that are dead. The objects arranged in it, the large majority of which were made for use, are admired for their ornamental value alone. I have met many ironic examples of this dis-

tortion—the work of modern craftsmen, for instance, being faked into antiques to raise their price, though the actual workmanship, unfaked, is just as good as that of the tradition it came from. But our progressive period abandons the living for the sake of the dead.

In two other directions I have discovered that my bygones are only fictitiously defunct. The whole of my collection, whether its theme be agriculture or rural industry or the cooking craft, is a speaking witness to man's relationship with the earth. Everything goes with the grain of nature, with the result that what was utilitarian in its function possesses beauty in itself. It never deliberately aims at beauty; it achieves it by thinking of something else. Even my pieces of Buckinghamshire Point Lace were not woven for art's sake; they were adapted from traditional patterns manifesting a general design for living which had proved itself to be stable and to offer a social and individual satisfaction for a skill-hunger inherent in man.

It is the frustration of this instinct—one is justified in calling it an instinct because the very earliest records of prehistoric man before he actually became *Homo Sapiens* reveal him

A collection of bobbins for lace-making. In the centre are those referred to in the text. The larger ones outside were for threading the gimp. Some bobbins have inscriptions, others are wound with beads or pewter rings and one or two have ivory heads



as a maker—which is primarily responsible for plunging the world into such strife and disorder as is almost universal today.

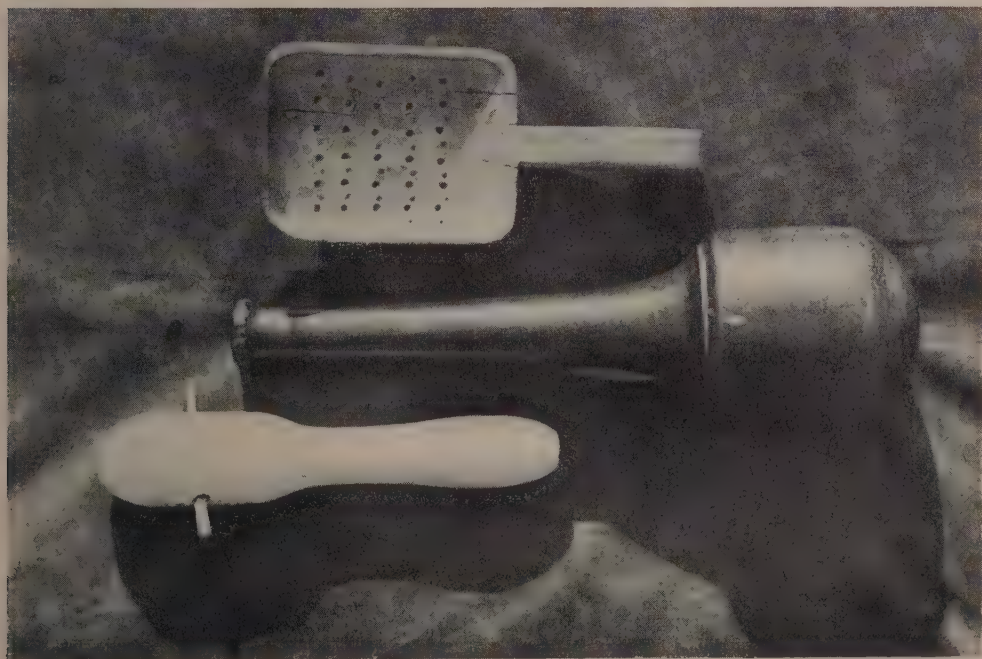
This is the fatal flaw of industrialism—that it offers no outlets for the expression of this instinct. Secondly, a large number of the objects to which I have given shelter evoke certain personal memories which are far from being merely sentimental and nostalgic. On the contrary, these memories have been part of my education and have enabled me to perceive glimpses of what I believe to be universal truths.

One of the more recent of these memories is of a mysterious person calling at my house bearing gifts. She was a sturdy, white-haired, smiling old lady who appeared out of nowhere loaded with bygones which she insisted on presenting to me. She then disappeared before I even knew her name, and it was not until her second visit, as sudden and fortuitous as the first, that she disclosed it. Among her gifts was a cream-skimmer that may have belonged to Laurence Sterne, since it came from the rectory, Shandy House at Coxwold, where he wrote part of *Tristram Shandy*, and is certainly old

enough to be of the right date. It is of white wood, possibly lime or sycamore, and the ladle, pierced by a bradawl into holes of rough edges, is curved rather like the keel of a sampan. The Welsh turners used to make similar ones but much thinner, though they cannot have been much lighter than this cream-skimmer of mine which seems as though it would float in the air if you let it go. How strange it is (to us) that the very humblest of these old tools has a singing shape!

Another of these presents from the cunning of the past was a gingerbread or spiced bread press, an inch-deep panel of (I think) beechwood, 14 inches by 5, deeply incised on both sides with 18th- and 19th-century costumed figures. A lady of fashion occupies one whole side, all in array for the salon, the theatre or Vauxhall, every detail of her figured dress, bodice, fan, necklace, coif and billowing wig being minutely carved. The reverse side portrays nine figures in rows of three, 18th-century soldiers, musicians with harp, clarinet and violin and three bonneted nymphs *à la* Staffordshire carrying respectively a basket of flowers, a watering-can and a sheaf of corn.

Cream-skimmer, probably lime, from Sterne's rectory at Coxwold where part of Tristram Shandy was written. Pestle, of teakwood, from Christchurch College, Oxford. Bill-elve of ash, for punching peg holes in roofing slats, made by William Bailey of King's Cliffe, Northants, in 1936





Sunday smock. 'Smocking' on breast, wrists and shoulders is elastic. The workaday smock usually had embroidery on the breast to indicate the wearer's trade at Hiring Fairs. (Opposite) Gingerbread press carved in wood

Are we to date the last of Keats's 'gingerbread wives' by Sue Bridehead selling her pressed gingerbreads at the Fair? What a wealth of play went with the work of our forefathers, so that the most utilitarian of vessels or implements was an expression of folk-art!

Of nothing could this be more richly said than the lace-bobbin, my benefactress adding half a dozen of these to my already large collection. They are in box-wood and fruit woods with the customary 'jingles' or attachment of wired coloured beads and one of them is surrounded with pewter rings. They had all belonged to a Mrs Newall of Bovingdon Green, an old lace-maker who with her mother made 100 yards of Buckinghamshire Point Lace for the trousseau of Queen Mary. The great mark and distinction of the lace-bobbin was its extraordinary diversity of form, of ornamentation and of the materials used. They were made in every kind of wood, in glass, in pewter, in bone (usually from sheep's trotters), in copper, brass and ivory. They are divisible into a few main groups—the

butterfly (inlaid with pewter), the church-window, the cow-and-calf (which contains a miniature one inside the parent body), the trolly (for threading the gimp). But these types overflow into one another, so prodigal is their variability. Many are spirally inscribed with mottoes, greetings, love-messages, toasts and the like which clearly reveal that they were once regarded as charms and amulets, like the symbolic brasses of horse-harness.

These evidences, with the frequent misspellings of the inscriptions, make it certain that the bobbin was rarely if ever a commercial product. When I was collecting information about this craft from the former lace-makers of my village, I found that the local bobbins had been made by the friends and relations of the workers in their spare time. Their social and ritual usages as Christmas and birthday presents and particularly as love-tokens is the final testimony that the bobbin is a representative witness of the lost folk-art of the English village, especially in the Midlands and the western parts of West Anglia. As such, it outlines two primary generalizations about that art. The first is that it was not only a social art but intimately and organically linked with the daily work of the people. The beauty, the decorative felicity of what were at one and the same time objects of sentiment and seasonal observance, and the tools of a trade were born of their usefulness. In them poetry and practice met and were fused. Secondly, their very wide range of variation demonstrates the bounty and vitality of the applied arts among the common people when it is manifested in a particular region and associated directly or indirectly with the earth.

This last prerequisite is perfectly illustrated by the last of the offerings my mysterious old lady made to me. This was a smock made by a woodman's wife on the estate of Lord Hollenden, near Tonbridge, and hand-spun and woven by her from the flax grown upon it a century ago. It is evidently a Sunday smock for two reasons, because it is white (but this is not conclusive) and because it has no embroidery at the breasts on either side of the collar lapels. Workaday smocks were more frequently black, grey, drab, blue and white, blue and olive-green than they were white, the colours like those of the painted wagons varying from county to county. But the lack of a trade-mark is more decisive. It reveals the contradiction between the urban and the rural ideas of the basis of art that my leisure-smock is bare of decoration, while the work-smock was most profusely and elaborately

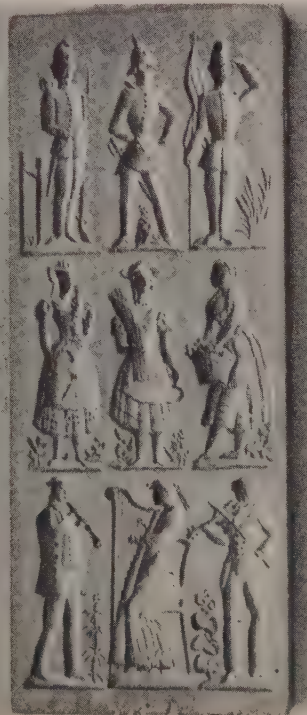
ornamented with stylized representations of the wearer's particular job.

A pictorial account of the latter is given by Miss Alice Armes, the Handicrafts Organizer of the Women's Institutes, who once presented me with some fine bobbins and an elegant pillow-horse. They were, in fact, what is called 'peasant costume' with these very thorough differences that the wearers, having lost their lands, were no longer peasants and that the costumes themselves were the reverse of an operative antiquarianism. They were the prosaic trade-marks of the land-workers who travelled to the Mops or Hiring Fairs to seek employment on new farms. The farmers passing among them identified the shepherd by conventionalized patterns of crooks, hurdles and sheep; the carter by a composition of harness, horses, whip-lashes and cart-wheels; the woodman by a picture of leaves, trees and axe-heads; the cowman or milkmaid by a sales-catalogue effect of butter-pats, churns and other dairy 'business'; the gravedigger by a fancy-work of skulls, crosses, tombstones and mattocks. Compare the pictorial effects of contemporary catalogues and indeed of most 'commercial art' with the beautiful and intricate designs of these embroidered smocks!

My own smock of white linen excels rather in the purity and quality of the substance, the fineness and elasticity of the 'smocking' at the shoulders and wrists, the gusset-folding, the lightness with warmth and the extraordinary durability. Though a century old, my smock has not a mend nor a fray nor any perceptible sign that it was being worn in the days of the toll, the turnpike and Mr Pickwick's coaching inns. Imagine the ribaldry if it were proposed that smocks were an ideal wear in the modern milking-sheds! But the reason why this is impossible is not that assumed by the progressive but simply because nobody today is capable of making garments that so perfectly combine service with beauty. The rural structure and design for living have been destroyed and out of their traditional stability were born the patterns of folk-art that embraced the work in play and the play in work of him whom it is now the fashion to call the drudging, downtrodden and boorish peasant.

Nevertheless, there is a valuable lesson to be learned of old-age pensioners in my Almshouse. Take the humblest of my more recent bygones, the second of its kind I have acquired. It is nothing but a scraper for hauling out the burnt 'fuzz' or 'goss' from the cottage bread-oven just before the loaves or cakes were shovelled into it for baking by the long bread-peel. Yet these two scrapers are

quite different in shape. Surely a tool like this, requiring no expert handling and designed to perform the most elementary of tasks, might have been standardized. But it was not, and that helps me to understand why one region in Ireland made no fewer than 150 varieties of spade. The paradox emerges that the more an art accepts and is obedient to its limitations the freer it is, and the closer a tool is adapted to a particular purpose, the more rhythmic its line or decorative its ornament. And this we see in nature where there is no idle decoration and shapes are almost invariably shapely not in spite but because of their purposiveness. Beauty, that is to say, is achieved by thinking of something else or life is saved only by losing it. Our former rural culture achieved its art by the same methods as nature's because it was close to nature. And since art cannot be excluded even from an oven-scraper, we cannot but conclude that the aesthetic faculty, if not frustrated as modern industrialism frustrates it, is mankind's universal endowment. We have only to glance at the history of man before the Industrial Revolution and immediately after his mutation from the anthropoids to receive an impeccable historical warrant for a generalization that only the modern age has flouted.





The Treaty Road

A Journey into Ladak

by R. C. and N. C. McWATTERS

ROUTES through the Himalayas are few and difficult, but they are full of interest and variety for those who love unfrequented ways and to whom time is no object. One of these, known as the Treaty Road, leads from India through Kashmir and Ladak to Yarkand in Chinese Turkestan. For many centuries it was a trade route of some importance, though now it is passable only by pack animals and is closed by snow on its many high passes for seven months of the year. About eight years ago it was closed at the Chinese frontier as a result of political difficulties between China and Russia, so that when we visited it in the summer of 1939 there was little traffic beyond Leh, the capital of Ladak.

To arrive in the Kashmir Valley in spring

from the scorched plains of India is an unforgettable experience. After 160 miles of motoring through the narrow gorge of the Jhelum River we emerged suddenly into a wide plain, brilliant with sunshine. It is full of pleasant waterways and the soft green of poplars and willows, and dotted with villages of timber houses very like the chalets of Switzerland. For background it is surrounded by some of the highest mountains in the world, some gleaming white in the sun, others half lost in the distant mountain storms which gather and disperse with great rapidity so that the landscape is constantly changing. To the north lies the main chain of the Himalayas which provides the first of the great passes of the Treaty Road.

At Srinagar in the middle of this plain we

collected camp equipment and a cook, both matters for anxious care, for no replacement would be possible until our return. From there the first stage of the journey was made in a *doonga*, a kind of light house-boat, along rivers and canals whose banks were carpeted with blue irises, in lovely contrast with the orchards of peach blossom and the snows beyond. That night we pitched our first camp by the river and collected nine little baggage ponies, nothing much to look at, but clever as goats on avalanche snow or slippery slopes of shale.

On the march, camp consisted of one 7-ft. tent for ourselves, one for the pony men and a small one to serve as kitchen. At the end of each march tents were pitched, camp chairs and tables were set out, and in an incredibly short time tea was served. However long the march a good Kashmiri cook gets to work at once, builds a fireplace of stones or mud, and has a good three-course dinner waiting as soon as one is ready for it. An experienced traveller expects to live as much as possible on the country, but sugar, flour, tinned butter and a few European stores have to be carried. Occasionally as a treat one buys a whole sheep 'on the hoof' which is slaughtered by the cook with due Mohammedan rites, for unless properly 'sacrificed' it would be unlawful for him and the pony men to eat the meat.

Every morning at dawn there is a hurried breakfast as tents are being struck and loaded on the ponies. An early start is necessary for many reasons; sometimes to cross snow before it softens in the sun, or before stones and avalanches begin to descend in the thaw, sometimes to finish a long march before the sun is at its height. In Ladak it is a common experience to start in bitter cold and to finish the march under a fierce and trying sun, or even to be scorched by the sun on one side and attacked by a biting wind from over the snows on the other.

The first three marches were up a fertile Alpine valley and led to a camp in the 'Valley of Glaciers'. Tents were pitched in a flowery meadow looking up a snow-filled valley, with five fine glaciers descending from the peaks on one side and a great pine forest on the other. Here we waited until the Zoji-la Pass was open for baggage ponies, making use of the time in climbing on the snow and getting acclimatized. On first arriving at this height, about 10,000 feet, climbing or even marching is breathless work, and it takes two or three weeks to get accustomed.

When news reached us that the first ponies had crossed we moved up to the next camp at

the foot of the pass. This begins as a forbidding-looking cleft in the mountain, with a deep gully at the bottom which is used as the winter route. It is much exposed to avalanches in the spring, so we chose the summer route, a narrow path cut out of the living rock on one side.

We started before daybreak under brilliant stars, in order to cover as much as possible of the journey while the snow was still hard, and followed the path by the light of lanterns, the ponies cleverly picking their way across steep avalanche snow where a slip would have precipitated them into the ravine below. Sunrise found us near the top of the pass. It was a strange dawning, for as often happens in clear weather at high altitudes, it was almost dusk in the shadows around us while the many snowy peaks were brilliant with the rosy light of sunrise. Hidden under the snow was a stream, the course of which had to be carefully avoided, as its roof of snow was subsiding and ponies are sometimes lost by falling through. In places, where great masses had fallen in, the remaining snow stood in cliffs thirty feet high above the river, or the roof sagged into its bed with great cracks marking the line of its banks.

Every four miles, perched high above the snow, is a little stone hut, used as a shelter from the winter storms by the intrepid post runners, who for a salary of less than a pound a month maintain a daily service in all but the worst weather, and are often snowed up for days in one of these huts. Such is their skill in mountain craft that for many years none has been lost, though accidents to other winter travellers are common enough.

As the rising sun melted the surface, the going for men and horses became more difficult and trying, the poor beasts often sinking deeply and having to be pulled out. It was a great relief all round to find grass on



Stanford, London

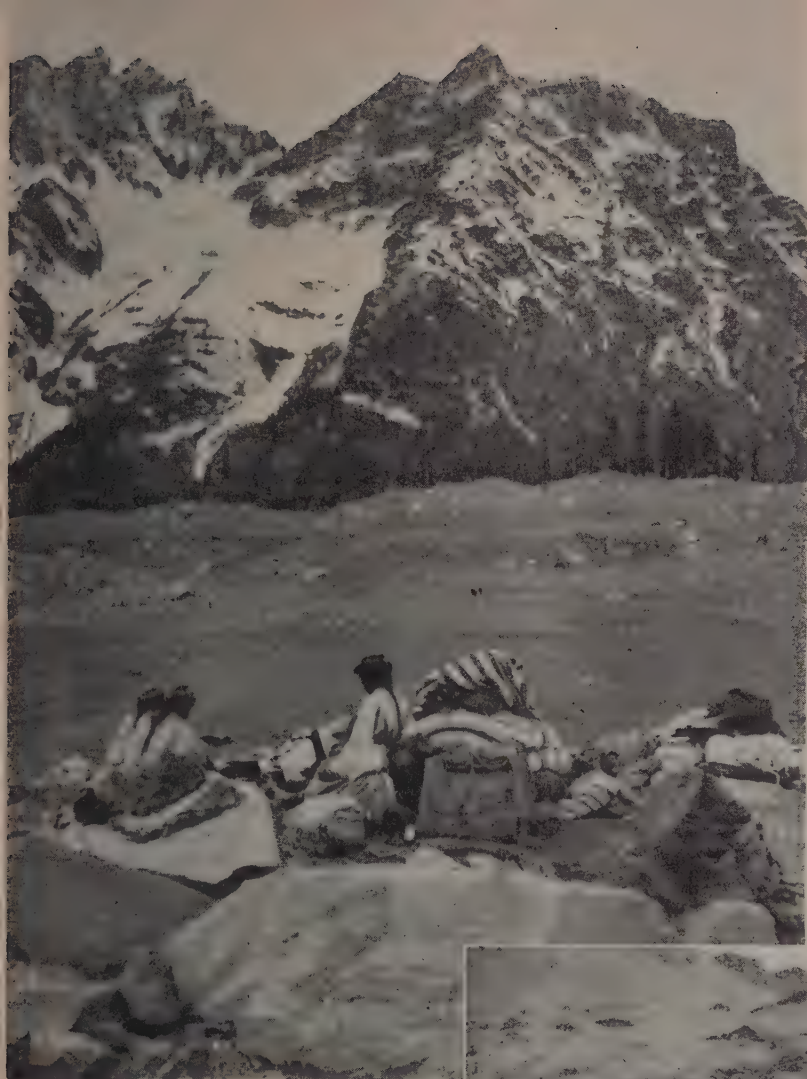


Photographs by the Author

the lower slopes, gay with gentians and primulas newly released from the snow, and springing into bloom almost as soon as they were uncovered. Soon we were at the bottom, across the Himalayas, and in a long wide stretch of grass and snow, between snow-clad rocky peaks.

We were now in a land utterly different from Kashmir, which we had left only that morning. Not a tree was to be seen, and the grazing for ponies was scanty: before long we should have to buy our fodder from the villages. The Himalayas extract all the moisture from the damp winds from the south, and in the next three months we only once saw a few drops of rain. By the roadside

a group of Tibetans with pigtailed and strange costumes had unloaded their caravan and camped for the night. They were sheltered from the wind by their bales of merchandise, and completed the impression that we were indeed in Central Asia. The only sign of civilization was the single line of telegraph wire which accompanies the traveller all the way to Leh. Birds were few, and the silence was broken only by the piercing, whistling scream of a marmot, a furry reddish animal which sits bolt upright to stare in astonishment at the intruder, and then with a warning cry to its fellows bolts into its burrow. As is common in the mountains the sky was of the deepest blue, and the air was extraordinarily



(Opposite) *The Zoji-la Pass which crosses the main range of the Himalayas, from Kashmir proper to the basin of the Indus and to Ladak. (Above) Just beyond the pass a party of Ladakis have halted for the night, with their piled-up bales of merchandise as shelter from the wind. (Right) Dzoes—a hybrid of yak and cow—ploughing the barley fields. A Mohammedan village can be seen in the background*

clear, giving a most deceptive idea of distance so that figures half a mile away assumed gigantic proportions, or seemed quite close.

For the next few miles the villages were occupied by Baltis and Dards, Mohammedans with more than a trace of Mongolian in their looks. Each wears a long coat of fawn coloured homespun, with a sash, often bright scarlet, into which he tucks his belongings, knife, tinderbox and silver-lined wooden cup.

Their boots are of felt, and their legs are encased in woollen puttees, a very serviceable kit for a land of bitter winds.

From here on there was no cultivation except where streams from melting snow and a comparatively level piece of ground made irrigation practicable. The ground was carved into irrigation terraces and we watched them being ploughed by means of dzos, a cross between the Indian humped cow

Ladakh girls. The one on the right wears the usual Korol-tokor, studded with blue turquoise on the crown. The other is a Christian convert and therefore does not wear it



and the yak, the wild cattle of Tibet. Recognized halting-places are always by a village in one of these artificial oases, where one can get grass for ponies, firewood, and milk of doubtful cleanliness and uncertain origin, usually the mixed produce of cow, goat, sheep and yak. Rice and wheat flour are unobtainable as they do not grow at this height, but potatoes and dried apricots are plentiful. Where villages are few, marches

with an air of elegance and distinction.

On approaching a village the road divides to pass on each side of a wall of loose stones, and on every stone are engraved the words "*Om mani padmi hun*". This is translated "Oh thou jewel in the Lotus". Just what this means no one seemed to know, but all agreed that great merit is acquired by repeating it. By entering the village on the left of this Mani wall, as it is called, and returning on the other

A villager of Kargil. The people here are Mohammedan, but in dress and features have much in common with the Ladakis

are tedious and long, sometimes as much as 23 miles. As we proceeded wild flowers and even grass grew scarcer. Valleys deepened to gorges several thousand feet deep, with steep cliffs so that the danger from falling stones forced the road to cross and re-cross the river by picturesque but rickety bridges, or to climb mountain spurs and descend again to the bottom of the valley. High or low we were never out of the sound of the torrent below. At Kargil, capital of the province of Purig, the valley widens and the gloomy barren ravine gives place to a four-mile stretch of irrigation and villages, a refreshing picture of barley fields and poplars lining the river-banks.

From there a long march of 23 miles led into Ladak, the country of the Buddhists. In every village the traveller is met with their greeting "*Julay, Julay*" and received by men and women alike with friendly smiling faces. The women wear a striking head-dress peculiar to the country, with projecting flaps of black sheepskin like huge ears, and a strip of leather heavily encrusted with turquoises over the head, hanging down the back in the shape of a cobra, the head on top and the tail dangling behind. Every woman wears a sheepskin cape, dirty and inside-out, yet somehow





A mani wall and chorten. Each stone in the wall has a prayer engraved upon it, and to walk around them is equivalent to repeating all the prayers

side, one circumambulated all the stones, which is equivalent to repeating the phrase once for every stone. Another such device is the prayer-wheel. One ingenious Buddhist in Leh has set up an even more labour-saving device, a water-wheel which turns a kerosene tin filled with prayers.

Outside the village is a number of dome-shaped buildings called chortens. These are imitations of the Buddhist stupas which enshrined some relic of the Buddha, and their contemplation is another source of merit.

Polyandry is common among the Ladakis. If the family estate descends to several brothers, the eldest shares his wife as well as the estate with the others. One estate, one wife is a rule which prevents the family out-

growing its food supply, and the breaking up of farms into units too small to provide a livelihood is avoided. In practice three or four husbands is as much as one wife can manage, so if there are more the youngest go into a monastery.

The larger monasteries are set in almost inaccessible sites. One is excavated in the side of a cliff, but as a rule they are perched on a pinnacle of rock. In many the presiding Lama is a *Shushok*, or reincarnation of his predecessor, and when he dies the search for his reincarnation among all the children born at that time may take years.

As the road leads from one tributary of the Indus to another it crosses two passes of over 13,000 feet, but in so dry a climate this is far below the summer snow-line, and the



Lamayuru monastery, on an almost inaccessible cliff. The village is below. In the foreground are a mani wall and many chortens

passes offer no obstacle but the breathlessness which afflicts both man and beast. The barren cliffs of the passes and valleys make up for their lack of vegetation by the brilliant colouring of their rocks, green and red, or yellow and brown. They are often weathered into fantastic shapes, so like gigantic men and animals that one can understand how a race brought up among them believes the world to be peopled with evil spirits. Though the ground is barren, there are occasional tufts of burtza and other aromatic herbs, which provide nourishment for yaks and for the goats and merino sheep whose hair and wool are sent down to Kashmir for which that State is famous. We often tried to get photographs of the mixed herds of sheep and goats, but as

they hurry from one tuft to another they move so fast we could never get near enough. A goat in this country has to walk five miles an hour to pick up a living.

Later the path descends to the Indus, which even here some 1300 miles from its mouth is a huge torrent. After a few marches its gorge becomes so precipitous that the track is forced to leave it and climb to a high plateau, a stretch of sheer desert without habitation, typical of Central Asia. When it rejoins the river the valley is wide, with patches of cultivation. At Spitok an isolated rock stands high above the river and bears the inevitable monastery. Near by is a garden and a rest-house for travellers, where, after ejecting the caretaker's indignant sheep and hens, we spent the last night before reaching



Leh. In the morning the town appeared to be but a mile away, but it proved two hours' weary march through sand and stones before we reached its unimposing gateway in a high mud wall. On entering we found ourselves looking up a wide poplar-lined street, which is also the local polo ground, and is dominated by a precipitous hill surmounted by the palace of the former kings of Ladak. More interesting still are the shops full of local supplies, a few European canned foods, and perhaps even a bottle of whisky. In short, a haven of rest after many days of the wilderness and of monotonous fare.

It was at Leh that the caravans from India and Chinese Turkestan used to meet and exchange their wares, until Chinese troops closed the frontier against all trade with India. At the time of our visit the town was full of empty and deserted warehouses, and the people were grievously impoverished by the

loss of their age-old livelihood.

Pilgrims from all parts of the country were gathering in Leh to go to the annual Mystery Play or Devil Dance at Himis, and we accompanied them on the two days' march to the monastery there. All were in merry mood, and the gayest group among them was a comely young Ladaki woman with her two husbands. She was mounted on their only pony, and on either side of her walked a husband, each bent on keeping her amused, and evidently on the best of terms with the other. Near the monastery we were met by monks who led us to a plantation of willows with a camping ground reserved for visitors. We were given a site with a flagstaff surmounted by a yak's tail and festooned with paper flags, all a sure protection against evil spirits and bad dreams.

Such hospitality required acknowledgment, and in the morning with the few other

(Opposite) Great bronze trumpets have been brought from the monastery to greet the British and Kashmir officials arriving for the Mystery Play. The willow wood is kept alive by irrigation from a stream flowing down from the snows. This little oasis, where the visitors camp, is a welcome contrast to the utter barrenness of the surrounding mountains. (Right) A Lama, carrying rosary and umbrella. These monks go out to the villages to perform religious rites on all important domestic occasions. They wear claret coloured homespun, the hat being red or yellow according to the order to which they belong. The Yellow Hat Lamas belong to a reformed sect, but the Red Hats are reputed to be lax in morals and discipline





Monastery courtyard at Himis, where the Mystery Play is enacted. Two great poles bearing yak-tails ward off evil spirits. Officials and visitors occupy the gallery on the right above the musicians.

foreign visitors we repaired to the monastery, bearing gifts of ceremonial scarves and slabs of sugar surmounted by a couple of rupees for our host, thereby indicating that all our resources and wealth were at his disposal should he need them.

We were received in an audience chamber covered with fine oriental rugs on which we sat in a row behind low Tibetan tables, and having exhausted the few words of the language which we knew, had to fall back on nods and smiles for conversation. We were

offered cardamom seeds and dried apricots, none too clean, to which we helped ourselves, hiding them discreetly in our handkerchiefs when no one was looking.

The monastery is built round a square courtyard and is well provided with balconies, so that it forms an excellent theatre for the dances. We were given seats (our own camp chairs borrowed for the occasion) in a balcony above the orchestra. The music is a great feature of the performance. Chants in honour of the founder of the monastery are sung by full rich voices and accompanied by drums, huge deep-toned trumpets, and flageolets made from human thigh bones. The music is solemn and exciting by turns, never shrill, and strangely pleasing to European ears.

Meanwhile two masked men amused us with their antics. Their prime duty was to maintain order and keep the arena clear, but this did not deter them from giving an excellent exhibition of clowning. Suddenly the music became loud and urgent, and two gaily-dressed acolytes came to the head of the stair leading down into the courtyard and sounded their thigh-bone trumpets; then the players descended into the arena, wearing hideous masks and robes of priceless Chinese embroideries (supplemented here and there by cheap Manchester cottons). There they proceeded with slow and awkward steps to dance around the courtyard.

It is difficult to follow the meaning of much that followed, for the dances are many centuries old, and no doubt much distorted from their original form. Some are said to illustrate the early history of Buddhism in Tibet, some portray the horrors awaiting the souls of those who have not secured the protection of the lamas, and in one episode a human figure made of dough is hacked to pieces with a sword and distributed to and devoured by the audience. Plainly a survival of some pre-Buddhist human sacrificial rite, though the participants would probably be very shocked at the suggestion. At another stage dogs and a pony spattered with red paint to represent blood are driven across the arena and out into the wilderness, bearing, we were told, the sins and ills of the last year, like the biblical scapegoat.

It was with real regret that we finally took the path back to camp past the booths and happy friendly crowd, leaving behind much of interest and of real beauty, but taking with us lasting memories of the courteous hospitality of the lamas and of the friendly smiles of our fellow pilgrims to the shrine.

Dancers in the Himis Mystery Play wear priceless silk-embroidered robes and crudely painted masks. These represent the chief Gurus, or religious teachers. Below is a Red Hat Lama seated before a Tibetan table, with a parchment scroll of music. Tibetan religious music is not unlike our own Gregorian chants





The Secretary Bird

An African Snake-Eater

by W. T. MILLER

ALTHOUGH Africa has many birds peculiar to itself, none is more characteristic of the open veld than the secretary bird, nor is there one in which successful adaptation to environment is more clearly shown. It is essentially a bird of the savannahs, familiar to everyone who has been on the park-like plains of the high

country between Upper Egypt and the Cape, but is never found in forest or mountain areas. In Southern Rhodesia, almost wholly high veld region, it reaches perhaps its heaviest distribution, and is often seen walking, with customary stateliness, within a few yards of the main motor roads of the colony.

The Secretary Bird, which has the fierce beak and flesh-eating habits that distinguish birds of prey, is found in South Africa, especially Southern Rhodesia. Its English name comes from the erectile crest at the back of its head which looks like a quill pen behind a clerk's ear. Its Latin name, Sagittarius serpentarius, refers to its snake-killing propensities



Photographs by the Author

The secretary bird combines the general appearance of a crane with the fierce beak and the flesh-eating habits of a bird of prey. It stands about three feet six inches high, and quite half its height is due to the extraordinary length of its pink legs. Its plumage is a fine ash-grey, with black on the wings and at the

end of the long tail. Its trailing crest and thighs are also black, and round either eye is a bare patch of vivid orange.

Although the secretary bird is now accepted as a close relative of the eagles, there is little family resemblance other than the strongly aquiline beak. For the 'Secretary' is a pedes-

trian, walking mile after mile over the grasslands in search of its prey. In the development of legs and feet and long balancing tail, its structural adaptation to this mode of life is most evident. Its feet with four strong stumpy toes and very short claws are plainly intended for the ground, and, in spite of their lack of eagle-like talons, they are formidable weapons in the bird's favourite method of attack—which is kicking.

The Secretary is most often seen striding vigorously along, the head turning keenly from side to side, the loose crest swinging from the back of the head, and the long tail sloping stiffly behind. To its graceful upright carriage, and consequent air of an archer advancing to shoot, the bird owes its scientific name: *sagittarius*. (The common English name comes from the trailing crest of black feathers which hang behind its head as the old-fashioned quill pen used to hang behind the ears of a clerk of 150 years ago.) But the early Dutch settlers in South Africa called the bird *slangureter*, or snake-eater, and the habit is recorded in the second half of its full scientific classification, which after a number of changes has been fixed as *Sagittarius serpentarius*. As a matter of fact snakes form only a small part of its food. Anything that lives in the grass it snaps up without distinction, and swallows as nearly whole as possible. Instances have been recorded of frogs, snakes, lizards, rats, quail, and tortoises (in the shell) being found together in the stomach of one bird; and I have myself known a Secretary to gulp down a hare after tearing it into three pieces. The undigestible parts of the food are ejected in the form of pellets, which may be found near the nest.

Possibly the Secretary will, like the ostrich, ultimately become altogether flightless. Today it prefers walking to flying, and if chased unfolds its great wings and strides over the ground faster than a dog can run. If hard-pressed it takes to the air, but flies only a few hundred yards before alighting again. Ordinarily, the bird takes a preliminary run with spread wings before it can launch into flight. However, once in the air, it is a powerful flier, and when mating pairing birds circle slowly over their chosen territory at great heights. They still roost and nest in trees, though awkward at balancing on a narrow branch since their feet are not adapted for clutching. Hence they sleep in a crouching position, with their legs doubled under them.

The bird's nest is a massive platform perhaps five feet across and two feet thick. This structure is usually accumulated through several seasons on the very top of a dense-

branched, flat-topped, thorny acacia tree. Often the site chosen has heavy parasitic growths of other thorn and 'mistletoe' plants. The Secretary begins by tramping this flat and dropping heavy sticks on it, and completes the platform by strewing it with a carpet of coarse dry grass. In spite of its size this nest is so well placed in the clustering foliage that it is difficult to detect.

Nest-building begins in August in Rhodesia, and the two big white chalky eggs, sometimes crusted with rusty blotches, are laid about the end of September. They take six weeks to hatch, and the young birds stay in the nest for about fourteen weeks. They are ready to fly by about the end of February. For the first few weeks the nestlings are covered in rough white woolly down and live on food pre-digested in the parent's stomach, which they obtain by thrusting their heads into the parent's beak while the food is being regurgitated.

While carrying out investigations on one family of young secretary birds I had unusual opportunities of examining their diet. The

The Secretary Bird builds its nest, a massive platform, at the top of an acacia tree in August and lays its two chalk-white eggs in September. They hatch in six weeks. The chicks opposite are ten days old





young birds were strongly resentful of my climbing to the nest, and showed it by loud hoarse croaking and fierce beak-snapping. When these tactics proved ineffective they retired to the furthest edge of their platform, sulked a while, and then, in a spasm of emotion, retched until they flung up the contents of their stomachs. Among the half-digested mess I saw at different times lizards, mice, locusts, frogs, guinea-fowl eggs, young birds, chameleons and snakes. But the bulk of the food was always locusts.

The first real feathers to appear are the two lines of black at the back of the head, which rapidly develop into the characteristic crest. The rest of the plumage begins to show in the sixth week and is of the same colour as the parents'. By eleven or twelve weeks the plumage is almost complete, and at this stage the young birds turn their attention to a new accomplishment—they learn to stand. Hitherto they have done no more than sit, or at times raise themselves to a squatting position. Their long legs, it seems, are too fragile to trust, earlier, on the insecure footing of their platform.

It is a curious trait among eagles that they carry fresh green leaves to their nest daily so

long as they occupy it. The secretary bird parallels this habit by bringing in its mouth a tussock of dry grass at each return and flinging it carelessly to the floor of the nest. I have never yet seen the bird carry prey to the nest in its mouth. Even when the young are almost fully grown the parents still regurgitate the food. On one occasion a bird I was watching stood on the rim of the nest for at least two minutes, undergoing a terrific series of convulsions, before it was able to throw up a hare, almost whole. At times one sees a secretary bird flying with a snake dangling from its beak. Usually prey of this kind is carried to a considerable height and deliberately dropped to the ground, although the reptile appears already to be quite dead.

Feet are the secretary bird's most formidable weapons in attack, but not the most terrifying. It advances on its prey with crest erect, beak gaping viciously, and black wings spread to their full span of eight or nine feet. Such a show naturally attracts attention, as I have discovered when attacked by a nesting bird. Then, while one's eyes are on the threatening head, comes a sudden devastating kick from the sturdy foot,

The female Secretary Bird brings a tussock of dry grass to the nest and flings it under the chicks



At twelve weeks the young bird is about full-grown. Its plumage is ash-grey, with black wing and tail tips; it has long pink legs and black thighs



followed by heavy trampling. It is probable that the outflung wings act as a shield in attacks on poisonous snakes, confusing them and making them waste their striking power. A case is recorded of a secretary bird, bitten in the wing, dying of poison after such an attack.

I know of no instance where a secretary bird has attacked a human being except in defence of its nest, unless I should include a bird of the London Zoo which, when I leaned against the enclosure fence, very speedily ripped a piece of leather from my shoe. That happened when I was a small boy. My impression that secretary birds were vicious lasted a long time after that encounter. I have since been attacked in climbing to a nest, and have seen a female bird descend in a fury on natives chopping down the tree where her nest was built. Ordinarily, though, these birds keep away from men, merely walking off in unhurried dignity if one attempts to approach them.

Weaver birds, whose greatest enemy is the tree snake, frequently associate with the secretary bird. Commonly their woven grass nests hang from the outer branches of the secretary bird's tree. Whether the partnership is entirely one-sided or whether the Weavers have anything to give in return (they are noisy announcers of any intruder, for instance) I have not yet been able to discover.

Various African governments have afforded protection to the secretary bird, mainly on account of its reputation as a snake-eater. Most of them, too, are rather sentimentally proud of this member of the country's fauna. The African's attitude as a rule is complete indifference, but the bad droughts of 1941 and 1942 uncovered a curious superstition, at any rate in the midland areas of Southern Rhodesia. The rainy season is due to begin in these parts in October and November, when the secretary bird is well into its nesting period. During these months in 1942 several cases were brought to my notice of local chiefs sending men out to cut down the nesting trees of secretary birds, and those of the Bateleur and Black Eagles as well. They contended that these birds, all of which have considerable wing spans, were holding back the rain with their wide wings, and that the destruction of the nests would end the drought. This belief, by the way, has been transferred and is now sometimes attached very strongly indeed to the aeroplanes which today fly over most African countries in considerable numbers.

War-time Farming in Eire

by BARNEY HERON

SUPERFICIALLY and to the layman, the problems of farmers in England and in Eire are much the same. There are however important differences. In England the brutal truth is that it takes a war to impress on the Government and on the people the importance of the farmer to the life of the nation. In Eire it is almost true to say that agriculture is the life of the nation. Most of our population is directly or indirectly dependent on farming. Forty per cent of all bank deposits and thirty per cent of all loans are made by or to farmers. Agriculture accounts for almost the whole of our export trade. When the farmer is prosperous his prosperity is reflected throughout the country as a whole. When farming is depressed we all suffer. This is immediately apparent in Eire; but in England, where farming concerns a comparatively small percentage of the population, it is not.

Besides this general difference of relative importance in the life of the community, there are other points at which, in technique and in general farming practice, we diverge from English custom. Irish agricultural policy is governed by one outstanding fact, little understood even in Eire. Owing to our high rainfall, rich pastures, and above all, our comparatively mild winters, we can produce store cattle up to two years old cheaper (as much as thirty per cent cheaper in some districts) than anywhere else in the British Isles. This is the most important single fact in Irish economic life. Cattle and calves account for three-quarters of our total agricultural output. It explains our development of the 'dual purpose' Shorthorn cow; an animal which produces bull calves good for beef, and heifers which will make tolerably efficient milkers. It is the answer to the critics who ask why our dairy herds are less efficient than, say, the Ayrshire or Friesian herds in England; why our beef animals are less impressive than England's Aberdeen Angus or Hereford herds.

It is one of the reasons why, in peace-time, the bulk of our crops grown is fed to live-stock, and imported wheat is used for bread. And now, one of the greatest changes brought by the war is that we must grow crops primarily for human consumption.

In peace-time the farmer is chiefly concerned with the disposal of his products at an

economic price; a problem really for bankers and economists. Everyone has heard of schemes to restrict production of this commodity or that. Even the music-hall comedians make jokes about farmers who were subsidized not to rear pigs. And we have all, in the past, heard stories of coffee being burnt and wheat being emptied into the sea. But the war made an end of all that; every effort is now made to produce more and more food for human consumption.

Here in Eire we must do this the hard way—an assertion which perhaps requires explanation. Farming policy here has been, and is, governed more by social considerations than by farming expediency. A low standard of living, low marriage rates, high emigration, and consequently a dwindling population are social problems caused partly by the plight of the landless farmer. To bring him some relief the reconstituted Land Commission was established in 1923. Its principal function was to split up the big estates and ranch farms, particularly those which were badly run; to compensate the owners, and to dole out the land in small-holdings to the landless farmers. In this way the Land Commission has taken over about a million acres, and divided the land among some 37,000 farmers. The official attitude is that a man and his wife can live on about thirty acres of averagely good land. That is to say, if times are good and he works hard, he should not die of starvation. But to farm an acreage of less than ten times this amount in a modern and efficient way is scarcely possible.

All this may contribute to the solution of the social evils already mentioned. It may or may not make for the greatest happiness of the greatest number. But while its sociological desirability may be open to argument, there can be only one view as to its technical disadvantages. Many people at different times have recommended as a cure for social evils the smashing of machines, a reversion to the past, an ostrich-like attitude to material and technical progress—always without success. The efficient way to farm is the easy way. There are always people to be found who will romanticize and glorify laborious methods, but they are seldom those who do the work.

To prepare ground for potatoes with a

spade is less easy than to plough. To plough with a tractor is four or five times quicker than with a pair of horses. (Horses as the chief motive power of a farm are as much an anachronism today as they would be in a modern army.) But if you are a small-holder, it is questionable whether it will be economically feasible for you to own even a pair of horses, much less a tractor, and most of us are small-holders. About half of all the farms in Eire are under thirty acres; only one farm in fifty has more than two hundred acres. For a farm to be efficient, economic and very productive, it should be large, mechanized, highly capitalized and adequately staffed. But we, almost all of us, lack machinery, are under-staffed and short of capital. These factors, added to the lack of fertilizers and imported feeding stuffs, make the problem of increased production a difficult one for the Irish farmer.

As in England, most stress has been laid on the necessity to increase the production of wheat. The results have been fairly satis-

factory because the Government has relied not merely on appeals to patriotism, but has also guaranteed the price to the farmers. Since 1939 the wheat acreage has risen from $\frac{1}{4}$ million to over $\frac{1}{2}$ million; the price from 30s. to 57s. 6d. a barrel.

Other commodities which are scarce here are bacon, sugar and butter. The bacon shortage is mainly due to the lack of feeding stuffs for pigs. Owing to transport difficulties beet can be grown economically only in those districts, such as Carlow and Kilkenny, where there are sugar refineries. And despite increased sowings of this crop the additional yield has not, probably owing to the shortage of fertilizers, made up the deficit of one-third of our total consumption which is normally imported. Usually the most profitable method of disposing of dairy products is to sell the milk as liquid. But in many large and fertile districts there is no ready market for milk. And in these areas, mostly in Munster, butter-making cooperative creameries, owned by the local farmers and



Photographs by the Author

Grove Dale Farm, within a few miles of Dublin, where the author gained his first experience of Irish farming. All the photographs illustrating his article were taken on this farm

subsidized by the State, have been established. The price paid by them to the farmer varies, but at the moment, in most districts, is 1s. a gallon, and the skimmed milk (worth perhaps 3d. a gallon) is returned to the farmer and used by him for feeding pigs or poultry.

One beneficial effect of the war is to force us to develop those natural resources at our disposal; to make us discover new values and to fend for ourselves rather than depend on imported goods. The process is slow but the tendency exists.

As a nation we are not much interested in good food. Our cooks are probably the least enterprising and most improvident in Europe. One reason for this is probably the excellence of our raw materials: our beef, mutton and potatoes are so good that little effort is needed to make them palatable. The small farmer when he thinks of vegetables seldom considers anything more exotic than cabbages and turnips. Every day our coastal fishermen toss back into the sea considerable quantities of edible fish for which there is no market in Eire. But this attitude is slowly changing. Beef is today, for all but the well-to-do, a luxury. The Government in its anxiety to

increase food production has made many grants of plots and seeds to the unemployed, and encouraged them to grow varieties of vegetables. This should have the effect of widening our tastes.

Alone among the European agricultural countries we are not a cheese-eating nation, and until fairly recently the only cheeses made in Eire were one or two of a very ordinary kind compared with those which were imported from England and the Continent in peace-time. But cheese is now being made on a small scale in the west of Ireland which compares well with the best one could buy in any market before the war. The courageous lady who began this enterprising venture is an encouraging example to the rest of us. In 1933-4 at the height of the economic war, when the bottom was knocked out of the cattle trade, Dr Crichton, who owned a 290-acre farm in Co. Sligo, decided to change his farming policy and go in for dairying. Being too far from Sligo town to sell his milk there, he made butter and cream-cheese and also sold cream in cartons. In the first year ten thousand packets of cream-cheese and thirteen thousand cartons of cream were sold.

The cow byre



Thus encouraged, Mrs Crichton decided to expand the cheese-making. She learnt all she could from Sister Evelle, a Franciscan nun in the west of Ireland who was an expert cheese-maker. She then developed a variety of excellent cheeses; had an instructress sent from Reading, and later sent a man of her own to Reading University for a course of cheese-making.

The first couple of years were full of difficulties. She had to contend not only with production troubles, but with selling her cheese to an unresponsive and disinterested public. Gradually the merits of the cheese became known to the more discerning members of the public, and soon the demand outran the supply. At this stage the worst of Mrs Crichton's troubles would seem to have been overcome. She produced nearly a dozen different brands of hard and soft cheeses, all of them excellent. She absorbed the entire milk output of the farm's Shorthorn herd—now established as a "Clean Milk herd" and producing T.T. milk—and also bought additional milk from the local creamery. But suddenly contagious abortion, that scourge and nightmare of all dairy

farmers, attacked her husband's cows, with the consequent inevitable loss of milk output. That was three years ago. Today Mrs Crichton has still difficulty in getting enough milk to turn out the $2\frac{1}{2}$ cwt. of cheese per day of which her plant is capable. But nevertheless she has established a triumphant example of the sort of thing that can be done to point out new values, to develop native resources, and create a taste and consequently a demand where it did not previously exist.

Many small farmers are too ignorant, have minds too inflexible, too steeped in old customs, to change their ways quickly to meet altered conditions; many others have a horror of appearing high-falutin' to their neighbours. A good example of this attitude is described by a member of the Government. He had noticed for several summers that a farmer in his constituency whose pastures lay in a valley alongside a river made hay in fields which were often flooded. Frequently a great deal of the hay was ruined before it could be taken in. He suggested that the farmer should make grass silage in those fields which were liable to be flooded, and that if he would do so the County Agricultural Instructor

Autumn sowing



would give him all the help and advice he required. The farmer seemed interested but did nothing. The Government Deputy approached him a second time and said that if the silage failed, or if the farmer lost anything by taking his advice he, the Deputy, would make this good to him out of his own pocket. But the farmer made hay that year as usual. And as usual a great deal of it was spoilt. When taxed about it by the Deputy he explained with embarrassment that he was afraid the neighbours would laugh at him. "What," he asked, "would they think of me, a farmer, with divil a pick of hay in the place? Sure, you couldn't have a farm without hay!"

To combat this kind of attitude the Government has established agricultural instructors in all counties. The difficulty is to get the farmers to avail themselves of the instructors' help. There is an old saying that the only sort of advice people ever heed is the kind they must pay for. It is perhaps significant that the instructors' advice is free. Not free, but within the financial reach of many more than those who attend them are the agricultural training colleges. At these schools, scientific and modern, but at the same time perfectly practical farming methods are taught. But in 1938, the last year for which figures are available, only three hundred students attended these colleges. The Department of Agriculture has done much to counteract this lack of interest. It has tried to spread knowledge by publicity, by the issue of free instructional pamphlets, and by readily offering help and advice when approached.

It would of course make nonsense to give the impression that all small Irish farms are owned and run by medieval, dull-witted peasants. Many are well-informed and enterprising, but most suffer from that old handicap—lack of capital. There are those at the moment, for example, who would like to try to convert one of our liabilities into an asset. The shortage of sugar for jam-making would seem to point to a profitable future for bee-keeping. But at the present time it would take the best part of £500 to set up a hundred or so hives. And not many small farmers could raise or risk such a sum on a speculative undertaking.

On the whole farming in Eire since the beginning of the war is paying, but nothing like so well as it should. No one seriously suggests that there should be a repetition of the spectacular profits of the 1914-18 war. But partly through lack of capital we are not able to make the best use of our present opportunity, when we can sell more than we

can produce. The disastrous effect of the depression in the early 'thirties is still acutely felt. Had industry passed through quite such a bad period, the results would have been more easily observed in the bankruptcies and from the number of factories which closed down. But Irish farms do not go bankrupt, or at least very seldom. For this there are two reasons. The first is that if a farm is mortgaged to a bank it seldom does the bank any good to evict the farmer, since it will be practically impossible to find a new buyer for the farm. It is unlikely nowadays that the new owner would actually be shot at from behind hedges (as he almost certainly would have been in the bad old days of absentee landlords), but he would probably find his gates left open and his livestock straying. He would certainly find it difficult to make that interchange of farm implements with his neighbours; a form of mutual help without which few small farms could carry on. This of course cuts two ways for the farmer, as it means that land without known excellence of character is poor security for a bank, and is therefore not always easy to raise money against. The second reason is that the small family farm has astonishing powers of endurance, which is not due to large capital reserves but to the resiliency of the family. Employing little or no paid labour, the unpaid members of the family will undergo the most frightful privations rather than lose ownership of their land.

This question of ownership of the land goes to the root of the problem. It would be dishonest or senseless to deny the satisfaction, pleasure and pride that most men get from ownership of land. Many will, to retain their own land, lead lives of desperate striving—sixteen hours or more a day—for a bare existence, yet knowing they would be better off employed only eight or nine hours a day by someone else. They have little freedom. They are ordered what to grow, how much to plough, and what they must do with their crops having grown them. They are hedged in on all sides by laws and regulations; they are harried for rates and taxes. In short, they suffer from all the disadvantages of the large state-owned farm without enjoying any of its advantages.

State (or cooperative) ownership of land is not the panacea for all farming ills. Large farms solve nothing merely by virtue of being large. But the big state-owned farm creates a necessary condition for enormous advances to be made. To coerce the small private farmer into joining such enterprises would be difficult anywhere; in Eire, useless. But it



Corn harvest. The author is standing on the right and his brother is driving the reaper

should not be impossible, by the creation of a few such farms, to persuade the private farmer, by their success and by the conditions under which their staffs worked, to support and join them.

The advantages of large-scale farming, making full use of modern machinery and equipment and all scientific developments, have been amply demonstrated in other countries. But here the Department of Agriculture has had a long and weary uphill struggle against the worst problems of Irish farming, not always with success. T.B. infects an unknown but admittedly extremely high percentage of our dairy cows. Contagious abortion strikes every herd sooner or later with terrible results. Food prices continue to rise, but the agricultural wage stands at 40s. in the west, 46s. in Co. Dublin,

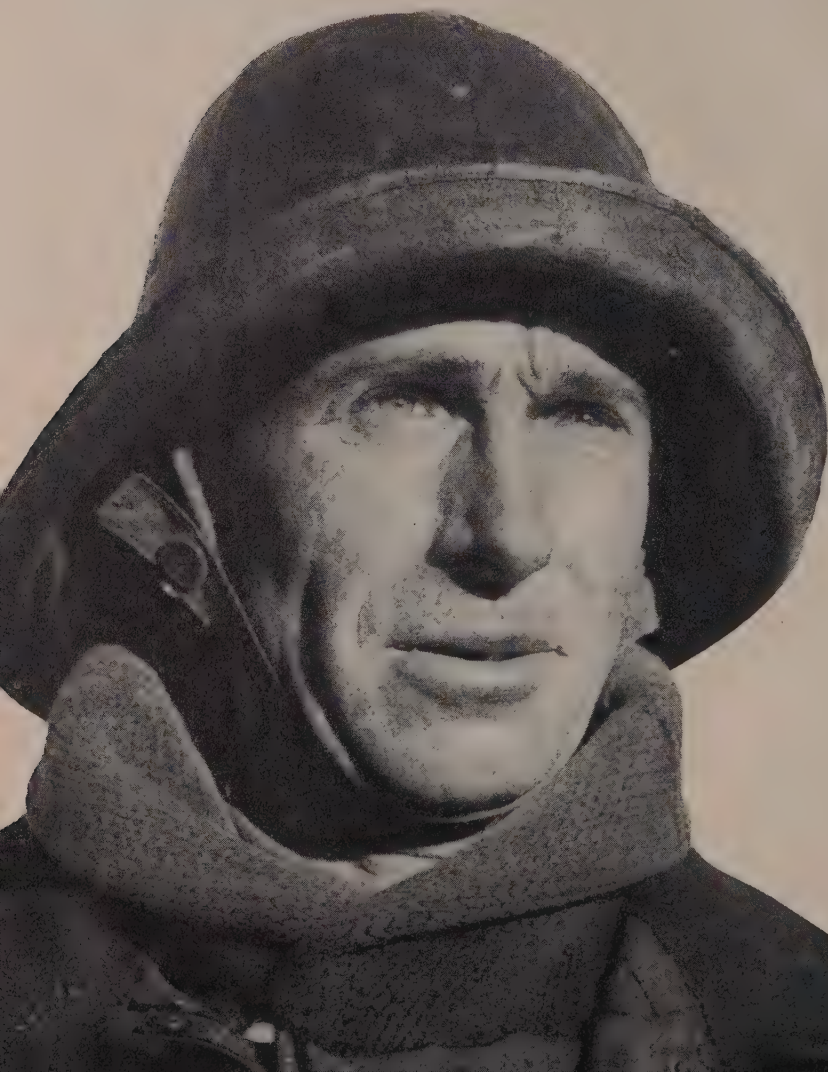
making farming the worst-paid job in the country. On the large-scale farm it should be possible to double the farm labourer's wage and still be economic. Disease in big self-contained herds can be more easily prevented or held in check if it does break out. On the small farm the owner must be too many things: farmer, mechanic, plumber, carpenter and 'vet'. He cannot be expert at all of them. But the large farm can employ its expert technicians; above all, its trained accountant, for successful modern farming is quite largely a matter of careful accountancy—an activity at which the ordinary farmer does not noticeably excel.

Here in Eire, all this is not yet practical politics (what cause worth advocating ever was?), but it may come, perhaps sooner than we think.

Lobster Fishers of Nova Scotia

by Malak Karsh

Most of the lobsters caught in Canada come from the Gulf of St Lawrence and the Maritime Provinces. These photographs were taken at Wedgeport, Nova Scotia, where a small French community, part of the Acadian Settlement, make a living by lobster-fishing, taking most of their catch in the Bay of Fundy.



The season begins at 1 a.m. on December 1st and no-one may throw a single lobster-pot even a moment before. The lobster is a peculiar creature: it swims backwards and when young grows by shedding its shell and developing a new one. During its first year of life it sheds the shell fourteen times, but as it gets older the number of changes is gradually reduced, until at four years the shell is shed only once a year. Its growth is very slow and depends on the temperature of the water. A lobster has been known to live for twenty years and to weigh forty-seven pounds. The average weight of the lobsters caught at Wedgeport, such as the one shown above, is from one to two pounds.



Photographs by Malak Karsh from Pictorial Press



Each fisherman has his own special 'ground' and hauls in about 200 pots a day. Double pots are dropped overboard from a moving motor-boat every few minutes. Fishing smacks (top, right) carry the catch to Boston, the most important market for Canadian lobsters. The man seen above begins his day's work by taking oil to his boat. On six evenings a week he returns to an island shanty, shown in the middle picture, near his fishing ground, but on Sundays he goes back to his permanent home in Wedgeport, shown below.



In Wedgeport, boys start early to learn their fathers' trade. This boy is helping to repair the boat's motor, a second-hand automobile engine. There is a strong movement in the village for more and better education, though there is great pride in the art of lobster-catching: the majority of the boys, like the two on the left, wisely consider that they can pursue both learning and lobsters. Wedgeport people are keenly interested in politics and the world outside and although French is their mother tongue, they speak English well and it is taught in their schools.

Nova Scotia is noted for its high tides—the normal rise at Wedgeport and Tusket Island is 14 feet—and to see the Wedgeport fishermen at work is to become "tide-minded", for they come home only at slack tide.



The top pictures show (left) a double lobster-pot being hauled in and (right) one of the coloured buoys used to mark the spot where the pots have been dropped. Below is part of the day's catch.*

There is an Inspector of Fisheries at Wedgeport who sees that fishermen adhere to the rules laid down by the Dominion Government, limiting the catch to lobsters above a certain size which prevents extermination. He also administers a Bounty paid to fishermen by the Government from a sum which the U.S. Government paid some years ago for the right to fish in Canadian waters.





Wedgeport families can rarely afford to eat their own lobsters; they live mostly on home-grown vegetables and less expensive fish accidentally caught in the lobster pots. On Sundays they eat meat. On the left, 'Grandfather', retired from the strenuous business of lobster catching, prepares a meal for the family. In the party below, only some of the thirteen children are seen because they have to eat in relays. 'Father' not only grows potatoes on his rocky land, but raises pigs and hens. Until a few years ago, the struggle to make a living at Wedgeport was often hard, but a better system of marketing has brought greater prosperity.



Index

- Aden Protectorate as air base, 119
 Adjim, 24, 31
 Adossides, A. *Shepherds of Greece*, 217-225
 Aegean Civilization:
 Minoan, 432 *et seq.*
 Mycenaean or Homeric, 485 *et seq.*
 Africa, *East, and the Future*. By E. Huxley, 14-23
 Air Power:
 Aden Protectorate, importance of, 119
 British Empire, maintenance of, 115-119
 Canada, as base for Empire, 112, 117
 Ceuta, importance of, 119
 Civil air routes, 119
 Development of, requisites for, 112-115
 Malta, importance of, 119
 Pacific route, 119
 Routes important for, 119
Air Power and Geography. By Sir E. L. Ellington, 111-119
 Air Transport:
 Gambia, importance of, 328
 Trans-Pacific bases, 246
 Akkad, ancient, 269 *et seq.*
 Akshak, ancient civilization at, 272
Alaska's New Naval Base, Kodiak. By I. W. Hutchison, 120-125
 Alde, River, 143-145
 Aldeburgh, 140, 141, 144
Algeria, In the Mountains of. By G. H. T. Kimble, 200-209
 Almonrol, Portugal, Castle of, 528, 529
Almshouse of Craftsmanship, An. By H. J. Massingham, 584-593
 Alps, entrance to Italy, 383, 384
 Amazon River, 56, 57, 58
 Andes, The, 56, 57-61, 64
Arabia, On Patrol in Southern, 265-267
 'Architects' Journal', extract on R.A. plans for rebuilding London, 5-6
 Architecture, Scottish, 248
 Argentina, 58, 62, 64
 Artillery, use in 17th cent., 69, 70
 Artists, Canadian, 396-407
 Asia Minor:
 Mycenaean settlement in, 488
 and Minoan civilization, 433, 434, 441
 Assyria, ancient, 270 *et seq.*
Atlantic, Gateways of the South. By Alex Comfort, 108-110
 Aurès Mountains, 202, 205
 Aviation, see Air Transport
 Azania, 15
 Azevedo, A. de. *Some Portuguese Castles*, 525-529
 Babylon, 276, 277, 280, 281
 Bandarpunch Mountain, 38, 39
 Barétons, ancient tribute from village of, 158-162
 Bear Island, 415
 Beaton, Cecil. *The Convoy*, 210-216
Bee-Keeper's Story, A. By F. C. E. Knight, 462-469
Bengal, Famine in. By Seth Drucker, 530-539
 Berbers, life of, 200-209
 Bethlehem, 240
Big Inch, The: The World's Largest Pipe Line. By R. Quarendon, 475-483
Birth of a Volcano, The. By T. Ifor Rees, 147-151
 Birtwistle, C. *King Cotton*, 84-95
 Bolivia, 58, 61, 64
Borana, Water in. By R. O. Hennings, 508-519
 Bordj Castille, 24
 Bordj el-Kebir, 24
 Bosanquet, M. *Life on an Ontario Bush Farm*, 492-501
 Bosnia, guerillas in, 428, 429, 431
 Boston Light, 50, 51
 Bou Ghara, Sea of, 24, 31
 Bourbon, Marguerite de, tomb of, 349, 351, 353
 Bowman, W. V. *Letter from Marathon*, 554-563
 Brazil:
 Cotton in, 84, 85, 87
 Bresse, Philippe, Comte de, tomb of, 349-350
 Bressey Report, 4
 Brewster, H. C. *Wilderness of Judah*, 102-107
Bridges, Old English. Notes and photographs by W. F. Taylor, 502-507
British Columbia, Salmon Harvest of. By L. A. Elliott, 180-185
 British Empire, maintenance of air power in, 115-119
 British Guiana, 62
Brou, The Monuments at. By A. Gardner, 348-355
 Brown, R. P. *Guerillas in Yugoslavia*, 421-431
 Bua (Vanua Levu), 293 *et seq.*
Bucovina, Painted Churches in:
 Voronet and Sucevița. By M. Nandris, 573-583
 Budo, Uganda, King's College, 18
 Buganda, 15
Building, Scottish Stone and Scottish. By G. Scott-Moncrieff, 248-255
 Bujuku river and lake, 307 *et seq.*
 Burma, effect of loss of, on food supply in Bengal, 532-533
 Bush, Raymond. *Frost in Spring*, 40-49
 Butler family, *see* Ormond, Marquis of
 Byzantine fresco art, specimens at Voronet and Sucevița, 573-583
 Cable, M. *Urumchi: Capital of Chinese Turkestan*, 445-451
Cairngorms, Winter in the. By F. S. Smythe, 392-395
 Calcutta, conditions in, during Bengal famine, 535, 536
 California, rubber production in, 256-264
 Cambridge:
 Expansion of:
 Town, 191-197
 University, 189, 191-192, 194
Cambridge, The Future of. By L. Dudley Stamp, 186-199
 Canada, as base for Empire Air Power, 112, 117
Canadian Artist and His Country, The. By G. McInnes, 396-407
 Canadian Artists, Federation of, 407
 Casson, Stanley:
 Structure of the Past (IV):
 Rise and Decline of Crete and Mycenae (I): 432-442, (II): 485-491
 Cavalry, in English Civil Wars, 76
 Cavour, Camillo, 386-388, 390
 Ceuta, importance as air base, 119
 Chakrata, 33, 35, 38, 39
Chalgrove Field. By John Hampden, 79-83
 Charlemagne and his empire, 542-543
 Charles I, 67-78, 80-83
 Chastleton House, 72, 78
 Childe, Professor V. G.:
 Structure of the Past:
 (II) *First Civilization in the Middle East*, 168-179
 (III) *Mesopotamia*, 268-281
 Chile, 58, 62
 Chiltern Hills, guarding London, 74, 79
 China, cotton in, 85, 87
Chinese Turkestan, Urumchi, Capital of. By M. Cable, 445-451
 Chirgwin, A. M. *Work and Wealth of Madagascar*, 152-157
 Christmas Island, 242, 247
Cider-Making in the West Country. Notes and photographs by G. T. Holford, 163-167
City of Rats, The. By Glynn Grattan, 338-340
Civil Wars of England, The. By C. V. Wedgwood, 66-78
 Clarendon (historian), 66
 on Hampden, 81
 Climate and cotton manufacture, 94
 Climate, English, in Civil Wars, 78
 Colombia, 61, 64
 Colonial Development and Welfare Act, 22
 Colonies, international control of, 22-23
 Columbia River, salmon in, 184
 Comfort, Alex. *Gateways of the South Atlantic*, 108-110

THE GEOGRAPHICAL MAGAZINE

- Comodoco Rivadavia, Argentine oilfield, 62
- Compton Wynyates, 75, 76
- Congo Basin Treaties, 23
- Convoy, *The*. By Cecil Beaton, 210-216
- Convoy Route, Russian. By G. L. Hogben, 408-415
- Cotton:
- Boll weevil, 85, 86
 - Industry:
 - History, 84
 - in Lanarkshire, 94
 - in Lancashire, 91-93, 94
 - Location of, 84, 85
 - Manufacturing processes, 88-91
- Cotton, King. By C. Birtwistle, 84-95
- Cousins, W. M. *Isle of Djerba*, 24-31
- Crabbe, George, and Suffolk. By C. Tennyson, 140-146
- Craftsmanship, *An Almshouse of*. By H. J. Massingham, 584-593
- Cretan civilization, 432 *et seq.* See also under Minoan
- Crete, ancient:
- Armaments, lack of, 439, 440
 - Climate, 434
 - Egypt, relations with, 439
 - Greece, relations with, 439
- Crete and Mycenae, *Rise and Decline of*. By S. Casson, (I) 432-442; (II) 485-491. Structure of the Past Series
- Crichton, Dr and Mrs, Eire farmers, 614-615
- Croatian littoral, operational area for guerillas, 423, 424, 425, 428
- Cromwell, Oliver, 66-78, 83
- Cyprus, Mycenaean settlement in, 487, 488, 489
- Dacca, famine relief in, 537
- Dalmatia, operational area for guerillas, 425
- Dayton, Bush Farm in Ontario, 492 *et seq.*
- Denmark Strait, 410
- Discovering Jerusalem. By Quintin Hogge, 233-241
- Divided Italy. By C. V. Wedgwood, 380-391
- Djerba, *Isle of*. By W. M. Cousins, 24-31
- Djorf, 24
- Donnington Castle, 70, 71
- Drucquer, S. *Famine in Bengal*, 530-539
- Dutch Guiana, 62
- Dutch Harbour, naval base at, 120, 121, 124
- East Africa and the Future. By Elspeth Huxley, 14-23
- East Africa:
- Education in, 21-22
 - Fuel problem, 21
 - Hydro-electric power in, 21
 - Overpopulation in, 21
 - Regional Councils, 16
- Ecuador, 58, 61, 64
- Edgehill, Battle of, 72, 73, 76
- Education in E. Africa, 21-22
- Egg Rock, 51
- Egypt, ancient:
- Administration of, 127-130, 137
 - Crete, relations with, 439
 - Decline, causes of, 133-137, 433
 - Foreigners, treatment of, 130-131, 135, 136
 - Libya, connection with, 130-131, 136
 - Mycenaean traders in, 488
 - Trade, 131-133, 136, 137
- Egypt, Ancient: *Expansion and Decline*. Structure of the Past (I). By Sidney Smith, 126-137
- Egypt, cotton in, 84, 85, 87, 88
- Eire: Land Commission, 1923, 614-615
- Eire, *War-Time Farming in*. By Barney Heron, 612-617
- El Dokolla, 511-513
- Electricity, use in flax-mill, 373
- El Kantara, 24, 31
- Ellice and Gilbert Islands Colony. By Sir H. Luke, 242-247
- Ellington, Sir E. L. *Air Power and Geography*, 111-119
- Elliott, L. A. *Salmon Harvest of British Columbia*, 180-185
- El Ubaid, period of ancient civilization, 269 *et seq.*
- Elvin, R. *The Isle of Man*, 360-368
- England, *Civil Wars of*. By C. V. Wedgwood, 66-78
- English Inn Signs. By F. R. Winston, 570-572
- English Villages in Rhyme. By J. E. Lloyd, 564-569
- Erech, see Uruk
- Eshnunna:
- Ancient civilization at, 272, 274
 - Relations with Indus valley, 176, 274
- Essex, Earl of, 73, 74, 80-83
- Ethiopia, water supply in Borana, 508 *et seq.*
- Euphrates, 268 *et seq.*
- Faeroe Islands, 408, 409
- Fairbanks, end of international highway, Alaska, 121
- Fairfax, Thomas, 67, 73, 75, 76
- Famine in Bengal. By S. Drucquer, 530-539
- Fanning Island, 242, 247
- Faridpur, famine relief in, 536-537
- Farson, Negley. 'Behind God's Back', reference to, 16
- Feira, Portugal, Castle of, 526-528
- Fiji, *Stockraising in the*. By Alexander Hall, 293-299
- Flax-Mill, *The Wiltshire*. By H. J. Massingham, 369-379
- Fog. By G. H. T. Kimble, 341-347
- Fraser River, salmon in, 180-184
- French Guiana, 62
- Frost in Spring. By Raymond Bush, 40-49
- Fruit-farms, frost on, 40-49
- Fuel problem in E. Africa, 21
- Future of Cambridge, *The*. By L. Dudley Stamp, 186-199
- Gallop, Rodney. *Tribute of the Three Cows*, 158-162
- Gambia, *The*. By Sir Richmond Palmer, 326-337
- Gardner, A. *The Monuments at Brou*, 348-355
- Garibaldi, Guiseppe, 388 *et seq.*
- Gate Latches, *English*. Photographs by E. M. Martin, 138-139
- Gateways of the South Atlantic. By Alex Comfort, 108-110
- Genoa, City State of, 382, 386
- Geography, *Air Power and*. By Sir E. L. Ellington, 111-119
- Germany, *The Origins of*. By C. V. Wedgwood, 540-553
- Gilbert and Ellice Islands Colony. By Sir H. Luke, 242-247
- Grattan, Glynn. *City of Rats*, 338-340
- Graves, K. E. *Tasmania*, 452-461
- Graves Lighthouse, 50, 51, 52
- Greece, Ancient:
- Crete, relations with, 439
 - Minoan culture, contribution to, 432-433
- Greece, 1941 campaign in, 554-563
- Greece, *Shepherds of*. By A. Adosides, 217-225
- Group of Seven, Canadian artists, 401-405
- Guayale, rubber plant, 256-264, 300-303
- Guellalla, potters of, 28
- Guerilla Warfare. By Yank Levy, reference to, 421
- Guerillas in Yugoslavia. By R. P. Brown, 421-431
- Guimarães, Portugal, Castle of, 525-526, 527
- Habsburg family, effect on growth of Germany, 545, 549
- Hagios Georgos, monastery of, 104, 105-106
- Halafian period of ancient civilization, 269, 270, 271
- Hall, Alexander. *Stockraising in the Fijis*, 293-299
- Hammurabi, King of Babylon, 276, 279, 281
- Hampden, Col. John (17th cent.), 67, 68, 79-83
- Hampden, John. *Chalgrove Field*, 79-83
- Hampstead, *London Village*, 312-318
- Hampstead Heath, 312 *et seq.*
- Hara Kebira, 28
- Harappa, ancient city of, 170 *et seq.*
- Hara Sghira, 28, 30
- Hennings, R. O. *Water in Borana*, 508-519
- Hercegovina, guerillas in, 428, 431
- Heron, Barney. *War-Time Farming in Eire*, 612-617
- Highland Light, 53
- Himalayan Holiday. By R. D. Leakey, 32-39
- Himis, devil dance at, 602, 604, 605
- Hittites, contact with Mycenaean civilization, 442, 488
- Hodgkin, Robin A. *Mountains of the Moon*, 304-311

INDEX

- Hogben, G. L. *Russian Convoy Route*, 408-415
- Hogg, Capt. Quintin. *Discovering Jerusalem*, 233-241
- Holford, G. T. *Cider-making in the West Country.* Notes and photographs, 163-167
- Homer, Minoan civilization and, 432
- Homeric civilization, *see* Mycenaean and Minoan
- Hone, Joseph. *A Kilkenny Journal*, 282-292
- Hopton, Sir Ralph, 68, 72, 73
- Houmt-Souk, 24, 25, 28, 31
- Housing and Town Planning Act, 187
- Hurry or Urry, Col., 67, 82, 83
- Hutchison, I. W. *Kodiak, Alaska's New Naval Base*, 120-125
- Huxley, Elspeth. *East Africa and the Future*, 14-23
- Hydro-electric power in E. Africa, 21
- Iceland, 408, 410
- Ickes, Mr., 475-476
- Inch, *The Big: The World's Largest Pipe Line.* By R. Quarendon, 475-483
- India, cotton in, 84, 85, 86
- Indus Valley:
first Civilization in, 168-179
Trade with ancient Mesopotamia, 274
- Inn Signs, English.* By F. R. Winstone, 570-572
- Intercontinental Rubber Company, 256, 259
- Intruder in Everyday Life.* The Story of Applied Mathematics. By Prof. E. G. R. Taylor, 319-325
- Irrigation:
in Cotton plantations, 86, 87
in East Africa, 19
- Italy, Divided.* By C. V. Wedgwood, 380-391
- Jamnotri, 37, 38
- Jan Mayen Island, 410, 411
- Jemdet Nasr, period of ancient civilization, 269 *et seq.*
- Jerusalem:
Communications, 233-234
Holy Places, 235-240
Old City, 234, 235, 239, 240
Jerusalem, Discovering. By Capt. Quintin Hogg, 233-241
- Jews, life in Djerba, 28
- Jordans.* By H. Shipp, 470-474
- Judah, Wilderness of.* By Henry C. Brewster, 102-107
- Jumna River, 35, 36, 37
- Karlovac, railway junction, 425
- Karsh, Malak. *Lobster Fishers of Nova Scotia*, 618-622
- Kashmir Valley, 594-596
- Katmai, Mt., eruption of, 124
- Kelway, P. *Ways of a Water Shrew*, 356-359
- Kenya, unit of E. Africa, 14, 15, 16, 23
- Kharsarli, 36, 37, 38, 39
- Kilimanjaro, Mt., 15
- Kilkenny Journal, A.* By Joseph Hone, 282-292
- Kimble, G. H. T.:
Fog, 341-347
In the Mountains of Algeria, 200-209
- King Cotton.* By Claude Birtwistle, 84-95
- Kirkpatrick, F. A. *Undeveloped South America*, 55-65
- Kish, ancient city of, 271, 274
- Knight, F. C. E. *Bee-Keeper's Story*, 462-469
- Kodiak, Alaska's New Naval Base.* By I. W. Hutchison, 120-125
- Ladak, A Journey into. *The Treaty Road.* By R. C. and N. C. McWatters, 594-605
- Lagash, ancient civilization at, 274, 275
- Lancashire, cotton industry in, 91-93, 94
- Lapwing, Secrets I stole from the.* By B. Melville Nicholas, 520-524
- Leakey, R. D. *Himalayan Holiday*, 32-39
- Leh, 594, 596, 602
- Leiria, Portugal, Castle of, 527, 529
- Letter from Marathon.* By W. V. Bowman, 554-563
- Levy, Yank. Reference to his *Guerilla Warfare*, 421
- Libya, connection with ancient Egypt, 130-131, 136
- Lichfield Cathedral, 76, 78
- Life on an Ontario Bush Farm.* By M. Bosanquet, 492-501
- Lighthouses, New England.* By E. R. Snow, 50-54
- Lika, operational area for guerillas, 423, 424, 425, 428
- Lloyd, J. E. *English Villages in Rhyme*, 564-569
- Lobster Fishers of Nova Scotia.* By Malak Karsh, 618-622
- Lombardy, 384, 386, 390
- London Plans.* By J. M. Richards, 1-13
- London:
Plans for Rebuilding:
Bressey Report, 4
Modern Architectural Research Group, 10
Nash's, 9
Royal Academy, 1-7
Wren's, 7-9
Regency Architecture, 9-10
- London Village.* By William Sansom, 312-318
- Luke, Sir Harry. *Gilbert and Elllice Islands Colony*, 242-247
- Lutoslawski, A. T. *People of the Pripet Marshes*, 416-420
- Machinery and craftsmanship, 379
- McInnes, G. *Canadian Artist and His Country*, 396-407
- McWatters, R. C. and N. C. *The Treaty Road, a Journey into Ladak*, 594-605
- Madagascar, Work and Wealth of.* By A. M. Chirgwin, 152-157
- Makarere, E. African University, 18
- Malta, as air base, 119
- Malta, Sunlight on.* Notes and photographs by Barbara Power, 96-101
- Man, The Isle of.* By René Elvin, 360-368
- Man, Isle of, constitution of, 363
- Mantua, 388, 390
- Maps:
Africa, East, 15
Alaska, 121
Algeria, 200
Arabia, Southern, 265
Bengal, India, 531
British Columbia, 180
Cairngorm Mountains, 395
California, 257
Cambridge:
Growth of, 187
as Municipal Borough, 197
Plans proposed, 196
as Road Centre, 197
Canada (showing Dayton), 492
Chalgrove Country, 80
Crete and Greece, 433, 485
Djerba, 27
Egypt, ancient, 133
English Civil Wars, 76
Ethiopia, Southern, 508
Fiji Islands, 293
France (showing Brou), 349
Gambia, 327
Germany, historical development, 540
Gilbert and Elllice Islands Colony, 243
Greece:
Campaign of 1941, 555
and Crete, 433, 485
Himalayas, part of, 38
Indus Valley, 169
Italy, 385
Jerusalem, 235
Judah, Wilderness of, 102
Kashmir (showing Ladak), 595
Kilkenny, 282
Kodiak, 121
Lancashire cotton industry, 94
Man, Isle of, 366
Mediterranean, Eastern, 133, 433, 485
Mesopotamia, 269
Mexico, 149
Middle East, 169
Moon, 217
New England Lighthouses, 50
Northern Sea Route, 409
Nova Scotia (showing Wedgeport), 619
Palestine, 235
Portuguese Castles, 525
Pripet Marshes, 419
Pyrenees, 162
Rumania (showing Bucovina), 573
Ruwendori Range, 305
Senegal, 327
Shushtar, Persia, 338
South America, 55

THE GEOGRAPHICAL MAGAZINE

Maps—continued

- Suffolk, 141
Tasmania, 453
Turkestan, Chinese, 445
Uganda, 305
United States of America:
Cotton Belt, 86
Eastern States, 475
World:
British Air Routes and R.A.F. Stations, 111
Cotton-growing Areas, 86
Yugoslavia, 423
Marathon, Letter from. By W. V. Bowman, 554-563
Margaret of Austria, 348 *et seq.*, 415
Margherita, Mt., 305 *et seq.*
Mar Saba, monastery of, 106-107
Marshutz, H. S. *Rubber from the Desert*, 256-264, 300-303
Marston Moor, Battle of, 67, 74, 78
Martin, E. M. *Photographs of English Gate Latches*, 138-139
Massingham, H. J.:
An Almshouse of Craftsmanship, 584-593
Wiltshire Flax Mill, 369-379
Mathematics, Story of Applied. By Prof. E. G. R. Taylor, 319-325
Matinacus, Island Light, 52
Mau, ancient civilization at, 272, 274
Mauretania, 326, 333
Medici dynasty of Florence, 384
Meit:
Conrad, sculptor, 348, 350, 351
Thomas, sculptor, 348
Meninx, 24, 28, 31
Mesopotamia: Structure of the Past (III). By Prof. V. G. Childe, 268-281
Middle East, First Civilization in: Structure of the Past (II). By Prof. V. G. Childe, 168-179
Miller, W. F. *The Secretary Bird*, 606-611
Minoan Civilization:
Art, 437
Religion, 437
Rise and Decline of, 432-442
Minot's Ledge Light, 53-54
Mobuku River, 305, 307, 311
Modern Architectural Research Group, plan for rebuilding London, 10
Mohenjo-Daro, ancient city of, 170 *et seq.*
Moldavia, painted churches at Bucovina in, 573-583
Monasteries in Judah, 104-107
Montenegro, guerillas in, 431
Monuments at Brou. By A. Gardner, 348-355
Moon, Mountains of the. By Robin A. Hodgkin, 304-311
Moon, Selenography: the Geography of the. By E. Tillotson, 226-232
Moslems, life on Djerba, 28, 31
Mountains of the Moon. By Robin A. Hodgkin, 304-311
Movila family, builders of Sucevița painted church, 583
Mycenae: Rise and Decline of Crete and: Structure of the Past (IV). By S. Casson, (I) 432-442; (II) 485-491
Nairobi, Alliance High School, 18
Nandris, M. Painted Churches in Bucovina, Voronet and Sucevița, 573-583
Naples and Sicily, Kingdom of, 382, 386
Naseby, Battle of, 70 *et seq.*
Nash's plan for rebuilding London, 9
Newbury, Battles of, 70, 78
New England Lighthouses. By E. R. Snow, 50-54
Nicholas, B. Melville. *Secrets I Stole from the Lapwing*, 520-524
Nile, source of, 304, 305
Nova Scotia, Lobster Fishers of. By Malak Karsh, 618-622
Ocean Island, 242, 246, 247
Oil Pipeline, World's Largest, *The Big Inch.* By R. Quarendon, 475-483
Old English Bridges. Notes and photographs by W. F. Taylor, 502-507
On Patrol in Southern Arabia, 265-267
Ontario Bush Farm, Life on an. By M. Bosanquet, 492-501
Origins of Germany, The. By C. V. Wedgwood, 540-553
Ormond, Marquises of, 283, 284, 286, 287, 289, 291
Over-population in E. Africa, 21
Owl's Head Light, 52
Pacific air route, 119
Painted Churches in Bucovina: Voronet and Sucevița. By M. Nandris, 573-583
Palmer, Sir R. *The Gambia*, 326-337
Paraguay, 62
Paricutin, Volcano of, 147-151
Pemaquid Point Light, 52
Penedono, Portugal, Castle of, 526, 528-529
People of the Pripet Marshes. By A. T. Lutoslawski, 416-420
Peru, 58, 61, 64
Philibert, Duke of Savoy, tomb of, 348, 349, 351, 353
Phoenix Island Group, 242, 246
Phosphate, product of Gilbert and Ellice Islands, 247
Pipeline, World's Largest: *the Big Inch.* By R. Quarendon, 475-483
Poland, Partition of, 543, 552
Polesie, Polish Province of, 416-420
Portuguese Castles, Some. By A. de Azevedo, 525-529
Potosí, Hill of, 61
Power, Barbara. *Sunlight on Malta*, 96-101
Pripet Marshes, People of the. By A. T. Lutoslawski, 416-420
Prussia-Brandenburg, effect of growth on Germany, 552
Pyrenees, custom of tribute of three cows, 158-162
Pyrton, home of Hampden, 79, 80, 83
Quaker Meeting House: *Jordans.* By H. Shipp, 470-474
Quarendon, R. *The Big Inch*, 475-483
Rats, The City of. By Glynn Grattan, 338-340
Rees, T. Ifor. *Birth of a Volcano*, 147-151
Reformation, effect on development of Germany, 545
Regency London, architecture, 9-10
Rhodes:
Mycenaean settlement in, 487, 488
Notes and Photographs. By R. D. Stern, 443-444
Richards, J. M. London Plans, 1-13
Rome, 380-382, 390
Roncal, ancient tribute to village of, 158-162
Royal Academy plans for rebuilding London, 1-13
Rubber from the Desert. By Herbert S. Marshutz, 256-264, 300-303
Ruku Ruku Bay, 293
Rupert, Prince, 66-78, 81-83
Russia, influence on Turkestan, 450-451
Russian Convoy Route, The. By G. L. Hogben, 408-415
Ruwenzori mountains, 304-311
Salinas valley, rubber production in, 256, 259-262
Salmon Harvest of British Columbia. By L. A. Elliott, 180-185
Sandzak, guerillas in, 431
Sansom, William. *London Village*, 312-318
Sargon, ruler of Sumer and Akkad, 275
Savoy, Duchy of, 384-386, 387, 388
Scottish Stone and Scottish Building. By G. Scott-Moncrieff, 248-255
Scott-Moncrieff, G. *Scottish Stone and Scottish Building*, 248-255
Secretary Bird, The. By W. F. Miller, 606-611
Secrets I Stole from the Lapwing. By B. Melville Nicholas, 520-524
Selenography: The Geography of the Moon. By E. Tillotson, 226-232
Sénégal, 327, 328, 333
Senegambia, 326
Shepherds of Greece, The. By A. Adossides, 217-225
Ship-money, 81
Shipp, H. *Jordans*, 470-474

INDEX

- Shrew, Ways of a Water.* By Phyllis Kelway, 356-359
- Shushtar, City of Rats, 338-340
- Sicilies, Kingdom of the Two, 386, 388, 390
- Sind, traces of Indus civilization in, 169 *et seq.*
- Sitka, naval base at, 120
- Slovenia, operational area for guerillas, 421-423, 425, 428
- Smith, Sidney:
Structure of the Past. (I) *Ancient Egypt: Expansion and Decline*, 126-137
Theory on Sumerian royal tombs, 274
- Smythe, F. S. *Winter in the Cairngorms*, 392-395
- Snow, E. R. *New England Light-houses*, 50-54
- Some Portuguese Castles.* By A. de Azevedo, 525-529
- South America, Undeveloped.* By F. A. Kirkpatrick, 55-65
- Spinning of cotton, 89
- Spitzbergen, 412-413, 415
- Stamp, L. Dudley. *The Future of Cambridge*, 186-199
- Stanley family, Earls of Derby, 363
- Stephen the Great of Moldavia, 573-576
- Stern, R. D. *Notes and photographs of Rhodes*, 443-444
- Stockraising in the Fijis.* By Alexander Hall, 293-299
- Stone, Scottish, for building, 248-255
- Structure of the Past:
(I) *Ancient Egypt: Expansion and Decline.* By S. Smith, 126-137
(II) *Middle East, First Civilization in.* By V. G. Childe, 168-179
(III) *Mesopotamia.* By V. G. Childe, 268-281
(IV) *Rise and Decline of Crete and Mycenae.* By S. Casson, (I) 432-442; (II) 485-491
- Subartu, ancient, 270
- Sucevița, painted church in Bucovina, 577-583
- Suffolk, *George Crabbe and.* By C. Tennyson, 140-146
- Sumer, ancient city of, 269 *et seq.*, 433 *et seq.*
- Syria, ancient civilization in, 270, 271, 274
- Tabora, Tanganyika, school for chiefs' sons, 18
- Tanganyika, unit of E. Africa, 14, 15
- Tariq el Djemal, 24
- Tasmania.* By K. E. Graves, 452-461
- Taylor, Prof. E. G. R. *Intruder in Everyday Life: the Story of Applied Mathematics*, 319-325
- Taylor, W. F. *Old English Bridges*, Notes and photographs, 502-507
- Tell Halaf, ancient village of, 269, 270
- Tennyson, C. *George Crabbe and Suffolk*, 140-146
- Ten Pound Island Light, 52
- Thame, Oxon., 79, 81, 82, 83
- Thebes, ancient, 432 *et seq.*, and 485 *et seq.*
- Thirty Years' War, effect on Germany, 545, 549
- Thomson, Tom, Canadian artist, 400, 401
- Tigris, 268 *et seq.*
- Tillotson, E. *Selenography: the Geography of the Moon*, 226-232
- Tito, General, 421
- Town planning:
in Cambridge, 186-199
in London, 1-13
National, requisites for, 197-198
- Trancoso, Portugal, Castle of, 528
- Treaty Road, The: A Journey into Ladak.* By R. C. and N. C. McWatters, 594-605
- Tribute of the Three Cows.* By Rodney Gallop, 158-162
- Troy:
Ancient City of, 440-442
Siege of, 488-489
- Tsetse-fly in E. Africa, 15, 19, 21
- Turkestan, Chinese: Urumchi, Capital of.* By M. Cable, 445-451
- Tuscany, Grand Duchy of, 384, 388
- Uganda:
Cotton in, 85
Unit of E. Africa, 14, 15, 16
- Undeveloped South America.* By F. A. Kirkpatrick, 55-65
- United Soviet Socialist Republics, Cotton in, 85, 87; see also under Russia
- United States of America, cotton in, 84, 85, 86
- Ur:
Ancient civilization at, 270 *et seq.*
Indus seals found in, 176, 274
Kings of, 275
Trade with Indus valley, 274
- Uruguay, 62
- Uruk, period of ancient civilization, 269 *et seq.*
- Urumchi: Capital of Chinese Turkestan.* By M. Cable, 445-451
- Valletta, 98, 100, 101
- Van Boghem, Loys, designer of Brou church, 348 *et seq.*
- Vanua Levu, Fiji Island, 293
- Velebit range, operational area for guerillas, 423
- Venezuela, 61, 64
- Venice, City State of, 382, 386, 388, 390
- Villages, English, in Rhyme.* By J. E. Lloyd, 564-569
- Volcano, Birth of a. By T. Ifor Rees, 147-151
- Volcanoes, eruption of:
Mt. Katmai, 124
Paricutin, 149
- Voronet, painted church in Bucovina, 573-577
- Waller, 69, 70
- War-Time Farming in Eire.* By Barney Heron, 612-617
- Washington Island, 242, 247
- Water in Borana:* by R. O. Hennings, 508-519
- Watlington, 79, 80, 81, 83
- Ways of a Water Shrew, The.* By Phyllis Kelway, 356-359
- Weaving of cotton, 89-91
- Webb, water-holes at, 515-519
- Wedgeport, Nova Scotia, lobster fishers at, 618-622
- Wedgwood, C. V.:
Civil Wars of England, 66-78
Divided Italy, 380-391
Origins of Germany, The, 540-553
- Wells in Borana, 508 *et seq.*
- West Country, Cider-making in the.* Notes and photographs by G. T. Holford, 163-167
- Wilderness of Judah, The.* By Henry C. Brewster, 102-107
- Wilson, Bishop T., 363
- Wiltshire Flax-Mill, The.* By H. J. Massingham, 369-379
- Winstone, F. R. *English Inn Signs*, 570-572
- Winter in the Cairngorms.* By F. S. Smythe, 392-395
- Worcester, Battle of, 66
- Work and Wealth of Madagascar.* By A. M. Chirgwin, 152-157
- Wren's plan for rebuilding London, 7-9
- Yugoslavia, Guerillas in.* by R. P. Brown, 421-431
- Yugoslavia, railway system, 422 *et seq.*
- Zanzibar, unit of E. Africa, 14
- Zoji-la Pass, Kashmir, 595-596

6351

PRINTED IN GREAT BRITAIN
BY R. & R. CLARK, LIMITED.
EDINBURGH

